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SARCOMA OF THE LIVER, MESENTERY, AND SMALL INTESTINE OF A COW: LYMPHADENOMA IN A COW.

BY PRINCIPAL WALLEY, EDINBURGH VETERINARY COLLEGE.

ON December 14th, I received a portion of the liver, mesentery and small intestine of a cow, with the following communication from Mr. J. R. U. Dewar, Midmar, Aberdeenshire :—

PRINCIPAL WALLEY.

"Dear Sir,—I sent away part of the liver, a portion of the small intestines, and the mesenteric glands of a cow to you yesterday. I am not quite sure of the nature of the disease. The liver weighed over 66 lbs. I will send you more particulars soon.

Writing two days later, Mr. Dewar gives the following additional particulars :—

"The cow, of whose liver I sent a part to you, was an undersized shorthorn, some eleven or twelve years old ; had been sucked this summer by twin calves, and was consequently in very low condition. She had been noticed ill about three weeks, and when I first saw her I thought she was suffering from simple indigestion, mainly caused by her poverty ; but as she did not improve, I was a good deal puzzled as to the nature of her ailment. The treatment at first was purgatives and stimulants, followed by stimulants, nutrients, and stomachics, and in the end by diuretics : the *post-mortem*

examination showed, however, that no treatment would have been of any avail. About a week before she died fluid began to collect in the abdomen. There was never any icteric appearance of the skin, and as her colour was a light roan, it would have been easily seen had it existed. She died from sheer inanition; her pulse was seldom, if ever, over 55, and her temperature only once reached 103°, and was generally about normal; the last week, indeed, it was oftener under than over the normal.

"On *post-mortem* examination, several pailfuls of fluid were found in the abdominal cavity—probably from four to six—and there was at least one in the thoracic cavity, the fluid from the abdomen being of a light yellow colour. The liver, as I have said, weighed over 66 lbs., and was diseased throughout; about the natural shape, and smooth in outline. There were fully twelve pints of fluid in the gall bladder of much the same colour as the fluid in the abdomen, but slightly thicker in consistence; the spleen and all other organs, save the lymphatics of the mesentery and the piece of bowel I have sent you, were healthy. There were two small button-like masses—not over three-quarters of an inch in diameter—attached to the pleura on the superior surface of the right lung as it lies against the large blood-vessels. The thoracic lymphatic glands were, however, affected, and the pancreas seemed slightly diseased. On section, the liver was found to be very hard, and grated under the knife; clear fluid, some of it being of a straw colour, the remainder having a greyish, milky hue, flowed from it. I am of opinion that it is cancerous, of the scirrhous variety. In some places the gland cells have entirely disappeared and their place occupied by small spherical, highly refractive bodies; where the liver is not much affected they can be seen invading the interior of the gland cells, some of which are also distended with fat globules, their natural outline being entirely lost. In the part I examined the stroma was not very distinct, but its fibrillated nature was quite apparent. I also observed that many of the normal liver cells in the invaded portions of the organs were tinted with bile, but there was no tinting where these supposed cancerous elements were contained in them."

The appearances presented by the specimens sent, were as follows:—

Liver.—Peripheral half was of a creamy colour, exceedingly hard, and grated on section; it was completely solidified, the blood-vessels and biliary ducts being entirely obliterated: the proximal portion was of an orange yellow colour, mottled with grey patches varying in size from a pea to a walnut; less hard than the peripheral portion, and blood-vessels and ducts obliterated to a much less extent; projecting into the cavity of the larger trunks of the portal vein, were irregular masses of the new growth.

Mesentery.—Lymphatic glands had undergone the same

change as the liver structure and, in addition, numerous small centres of new growth existed in the mesentery itself.

Intestine.—Mucous membrane thickened and increased in vascularity; sub-mucosa hypertrophied and the seat of numerous small masses of the new growth, with several large ones about the size of a Brazil-nut projecting through the membrane into the cavity of the intestine, and having a nodulated surface.

The cut surface of the liver in the portions which were invaded to the greatest extent yielded a copious juice of a creamy colour and consistence, microscopical examination showing that it was mainly composed of large round, or slightly oval, nucleated cells—the condition of the liver cells being similar to that described by Mr. Dewar.

On examining a small section microscopically, I found it to consist of a dense fibrillated stroma, the meshes of which were packed with cells giving it an appearance very similar to that depicted in figure 25, p. 154, of Jones and Sieveking's "Pathological Anatomy."

From the appearances presented, I was at first inclined to look upon the new growth as lymphomatous, but subsequent consideration of its characters and the manner of its dissemination led me to the conclusion that it was sarcomatous, or at least identical with Virchow's lympho-sarcoma. I have not, however, completed my investigation, and several of my professional friends—medical and veterinary—have been supplied with specimens for examination. Should we arrive at a different conclusion than that above mentioned, I will communicate with you again.

The points of interest in connection with the case are, the extension of the disease to the small intestine, the amount of infiltration, and enormous size of the liver.

Since receiving the above specimen, another section of cow's liver has been forwarded to me by Mr. Dewar, in reference to which he says, in a letter dated January 14th:—

"I have sent you another piece of a cow's liver: the animal from whose body it was removed died on the 7th inst. I can tell you but very little about the cow in question, except that she was of the black-polled Aberdeenshire breed, was in good condition, and had been thriving well until about a week prior to her death, when she presented symptoms of acute

indigestion, with pleural and peritoneal effusion. As I had to make the *post mortem* up to the knees in snow, in an open field late in the evening, I could not take particular notice of the appearances presented. I think, however, that this is a case of lymphadenoma."

A very cursory examination enabled me to endorse the opinion expressed by Mr. Dewer, as the characters of the new growth were distinctly those of lymphadenoma, though it is the first well-marked case I have seen in the liver of the ox.

EXTENSIVE SUPPURATIVE MYO-CARDITIS AND PERICARDITIS, WITH MITRAL AND AORTIC STENOSIS, ECCENTRIC HYPERTROPHY OF THE HEART, AND CARNIFICATION OF THE LUNG TISSUE, IN A PONY.

BY THE SAME.

A SHORT time ago I received a box containing the heart, pericardial sac, and a small portion of the lung of a pony, from Mr. E. Meek, M.R.C.V.S., Walsall, and, by post, the following letter:—

"I have, per London and North-Western Railway Company, sent you a box containing the heart of a pony about thirteen hands high, rising four years old, that I have had under treatment for the last six weeks. His illness commenced with a trifling cough and a slight discharge from the nostrils; the discharge soon ceased, and the remaining symptoms were slight injection of the mucous membranes, an almost imperceptible pulse, and loss of appetite; he gradually got thinner, and dropped dead yesterday while the groom was drenching him.

"I have not cut into the organ, preferring to send it you intact, as an examination of it may be interesting to you in the presence of your students. On making an examination, if there is anything particularly interesting, I shall be glad of your informing me. On opening the pericardial sac, a large quantity of fluid escaped."

In answer to some queries which I addressed to him, I received the following letter from Mr. Meek subsequently:—

"The pony belonged to Mr. Hunt, of Wednesbury, and had been in his possession six months; was broken when he bought it, and worked quietly and well all the time, and was not ill in any way during that time, until about six weeks prior to his death, when he showed the usual symptoms of

an influenza cold, which passed off in a few days, excepting an occasional cough which continued up to the time of his death. The breathing was never embarrassed in the least. He was exercised regularly up to within a week of his death, and one day, a fortnight prior to his decease, was driven four miles and showed no symptoms of exhaustion or distress, but did not go with his accustomed freedom. All the other organs in the body were healthy, with the exception of the lungs being throughout similar to the small portion I left attached to the heart. When I opened the pericardial sac, I should think quite three quarts of fluid escaped of the thickness and colour of whey, with a good deal of pus floating in it.

"I did not examine the blood-vessels of the lungs sufficiently to say whether there were white blood clots in them or not.

"The pony had never been frightened or exposed to cold that the owner knew of, neither did he show any symptoms of Strangles while in his possession.

"I never could detect anything wrong on auscultation, and examined his chest many times. I had a bullock slaughtered a short time back for disease of the heart, which was palpable enough, for I could hear the heart's action at a distance of some yards away from him, the sound resembling that produced by the movement of any object in a collection of fluid,—as distinct a noise, in fact, as I could make by moving my hand backwards and forwards in a bucket of water; and, *post mortem*, I found a piece of stay wire in the heart and a very large quantity of serous fluid in the pericardial sac, the fluid being clear and of a light red colour; while the fluid in the pericardial sac of the pony was, as I have said before, similar to whey. For three weeks previous to the pony's death I could not count the pulse at the jaw."

On examining the organs mentioned, I was led, involuntarily, to ask myself, Is it possible that an animal lived on until the heart had assumed such conditions as these?

The portion of lung presented all the characters of carnification.

The epicardium and the internal surface of the pericardium were thickened, opaque, in some parts united by recent adhesions; in others, covered by layers of lymph in various stages of organisation and degeneration.

The heart weighed ten pounds, and, as may be assumed from its weight, was enormously increased in bulk, its walls being much dilated.

The walls of the right heart were not materially altered structurally; but on carefully examining the base of the left ventricle, I discovered that it was greatly thickened and hypertrophied, of a greyish colour, and entirely separated from the epicardium, its external surface presenting a ragged, ulcerated

appearance, owing to caseous degeneration and suppuration which had evidently been proceeding rapidly.

The walls of a large abscess, which had evidently evacuated its contents into the pericardial sac, were discovered in close proximity to the diseased part to which I have just referred.

The interior of the right heart was normal, but on laying open the left ventricle I found that the mitral orifice was so much narrowed as to scarcely admit two fingers together, and the aortic opening was in much the same condition. The valves themselves were healthy, except that to the under surface of one of the cusps of the mitral a nodulated mass of newly organised lymph was adherent.

The stenosis of the mitral and aortic orifices was due to the protrusion inwards of the hypertrophied and partially degenerated cardiac walls.

The cause of the pulmonary carnification, as also of the indistinct pulse, is patent; but the absence of more pronounced symptoms and the ability of the pony to travel a distance of four miles a fortnight prior to his death, without evincing symptoms of distress, is remarkable.

FRACTURE WITHOUT DISPLACEMENT, CAUSED BY MUSCULAR ACTION.

BY F. BLAKEWAY, F.R.C.V.S., STOURBRIDGE.

I SEND a brief notice of a case of fracture without displacement, which occurred in my practice recently—not that such an accident is at all rare, but fracture of the humerus from mere muscular action in a young healthy animal may, to some of the readers of the VETERINARY JOURNAL, seem rather strange.

A bay cart mare, seven years old, belonging to Mr. H. Smith, of this locality, was on November 26th, drawing manure out of town, she being in traces, as two horses were in each cart. A second load had been carried to the field, where the ground was a little heavy, when she, being a very free animal, "jumped," to use the waggoner's expression, into the collar, and instantly became dead lame. She was at once released from the cart and walked a distance of three or four fields into her stable.

vehicle a distance of four miles. The groom stated that he I was sent for, and on arrival found her resting the limb; and although at times she put her weight upon it, yet she appeared to be in intense pain. I could detect no crepitation, yet from the symptoms I was compelled to inform the owner that I was certain fracture was present, and held out but slight hopes of her recovery. As she was a valuable mare, however, and in foal, treatment was decided upon, and I at once placed her in slings, and ordered constant fomentation to the injured part.

Next morning there was great swelling,—nevertheless the mare appeared to be easier, and she continued progressing favourably, as we thought, for three days. At the end of this period separation of the fractured pieces of the bone took place, and she was of course immediately killed.

On examining the limb great extravasation of blood into the surrounding tissues was discovered, with laceration of the muscular substance in places. The humerus itself was the seat of an irregular fracture towards the lower third of the bone. This fracture must have been caused by muscular effort only, as the mare could not have come into contact with any body or substance at the moment the accident occurred likely to produce such a serious lesion,—and until she "jumped" she was perfectly free from lameness.

CIRRHOSIS OF THE LIVER IN A BAY HARNESS GELDING.

BY ALEXANDER GUNN, V.S., BALLOUN, BEAULY, N.B.

I VENTURE to submit to you for insertion in the VETERINARY JOURNAL, should you deem it of sufficient interest, a case of Cirrhosis of the liver, which I may say is not of common occurrence in the equine species; and as the diagnosis of liver diseases is generally attended with much difficulty, it may be of some little interest to the readers of the Journal.

The animal referred to was a valuable five-year old bay harness gelding, the property of W. Arres, Esq., Fodderty, Dingwall. I was asked by the owner on 14th September last to examine him, after he had been driven in a light four-wheeled

took a good deal of driving. On examination the pulse numbered thirty-four, and was feeble ; the conjunctival mucous membrane was highly injected ; the eyes watery, and eye-lids half closed ; the respirations accelerated ; knuckling over of off hind fetlock ; auscultation revealed crepitations on the lower border of the left lung, immediately behind the elbow, but there was nothing amiss with the heart or right lung. An occasional cough had been heard for some days previous to this time, although I failed to hear it when making the examination. The temperature in the rectum was 102° F. Pressure along the border of the false ribs and intercostal spaces did not cause the animal to evince pain. He had refused his corn for some days previously.

Diagnosis.—Pneumonia—circumscribed—of left lung, with disordered liver. Ordered an oleaginous aperient, a stimulating liniment to be applied over the region of the left lung, and Potass. Chloras. 2 ounces night and morning in bran mash.

On the 16th I found him much the same as on the 14th. The temperature was 102° ; urine high-coloured ; pulse sixty, small and feeble ; mucous membranes of a rusty colour ; eyelids half closed ; standing with the lower jaw resting on the manger. An examination of the urine showed the presence of bile in large quantity.

20th.—Slight improvement ; pulse fifty-four, and full ; temperature 101·5° ; refused bran mash and corn ; drank sparingly, and ate very little hay ; would eat a Swede turnip occasionally. The cough had not been heard for twenty-four hours. Auscultation gave a negative result ; percussion revealed a dull sound, as if part of the lung was undergoing hepatization.

24th.—No improvement since last visit. The animal stood with his head resting on the manger ; the groom said he did so for hours at a time. He was becoming much emaciated, and refused bran and corn ; no increase of thirst ; ate sparingly of any food ; abdomen tucked up, and coat pen-feathered. He lay on both sides ; kicked often with the off hind leg. Gave a bolus composed of aloes 5 drams et hydrarg. sub. mur. 3 drams ; and when the physic operated, nitro-muriatic acid twice a-day in cold water.

28th.—Great emaciation ; pulse fifty-eight ; temperature 102·3°. The physic had operated, and the animal took a little bran mash and turnips, but would not touch corn, and ate very little hay. The membranes were still injected ; the fæces were natural ; urine amber-coloured and scanty. A blister was applied to the right side, over the region of the liver. Pressure over the right side, prior to blistering, caused no pain. He continued to strike with the off hind-leg. A slight sweat was noticed by the owner in the morning over the right side of the neck, shoulder, and chest. The cough was not heard for the previous three days. The skin emitted a fœtid smell, as also did the breath. Owing to the rapid emaciation, I was induced to feed the animal on milk and eggs twice daily, along with stimulants. Mineral tonics were also tried alternately, but no improvement was noticeable. From this date till the 18th December, when he died, anorexia was a marked symptom throughout. He had not eaten above four pounds of corn for six weeks.

On *post-mortem* examination, made nineteen hours after death, I found the liver much hypertrophied and greyish coloured ; it weighed about 45lbs. Its capsule was slightly roughened near the centre, and smooth towards the margin. On a section being made through the liver, the Glissonian capsule was observed to be much thickened near the centre, and gradually became attenuated towards the margin. The thickest part was nearly quarter inch, and a small quantity of bile flowed from the section. The liver was very tough and hard. A small circumscribed patch of inflammation was detected on the border of the left lung, simulating an inverted M ; it extended to about four inches from the margin ; and on a section through its border and centre being made, a quantity of pus of a dark yellow colour flowed from it. The part of the lung was quite hard to the touch. With the exception of the liver and left lung, nothing abnormal could be noticed in any of the abdominal or thoracic viscera. Drs. Bonce and Peterkin, of Dingwall, who kindly attended at the necroscopic examination, were clearly of opinion that it was a well-marked case of Cirrhosis. On making a microscopical examination of a section of the liver I found it to present the following appearance, a

sketch of which I have made as exact as possible—as seen through the microscope—using a low magnifying power, which

Section of Cirrhosis of the Liver, showing the amount of Fibrous tissue between the lobules.

shows the great amount of fibrous tissue in the indurated organ.

After the above examination, the owner told me that the horse had fallen twice on his right side; first, some twelve months since, when out exercising, he shied and came suddenly down on his right side, injuring his groom's right leg, which has been the cause of severe Sciatica in the limb ever since. The second fall occurred some months after the first, when, being driven in harness, he turned on the road and fell heavily on his off side, but without external injury. Shortly after this (the owner could not give the length of time) the horse became dull for a few days, but this passed off without treatment, and he had been more or less dull at intervals after the falls referred to. Might not these two severe falls have something to do in this case, by causing a certain amount of inflammation in the organ? I have known the animal since he was a two-year-old colt; he always looked fat and had a sleek coat, was easily kept in condition, and was very high-spirited.

GLANDERS AND FARCY IN INDIA.

BY A. E. QUERIPEL, M.R.C.V.S., ROYAL ARTILLERY AND RESERVE REMOUNT DEPÔT, HAPUR, INDIA.

FROM time to time there has been allusion in the columns of the VETERINARY JOURNAL to the above subject, and in the issue for December, 1877, there is mention of a peculiar type of this disease, which showed itself with great violence in one of our cavalry regiments. As I was fortunate to have witnessed a number of these rather unusual cases, and also to have assisted at the *post-mortem* examination of two horses which were destroyed, I feel that a few remarks on the malady may not be amiss, especially as it assumed a form which, as far as my experience teaches me, is of rare occurrence at home. Any one without previous knowledge of this type of the malady would, in all probability, allow the small tumours, which are the only premonitary signs, to pass unnoticed, and the horse might be permitted to remain in the stable and be worked, thus spreading the disease far and wide. In addition to this, danger might accrue to his attendant, through ignorance of the nature of the disease. Fortunately, in England this insidious type of Glanders and Farcy is seldom met with; but Continental writers seem to be well aware of its existence. Most of the tumours appeared on the ribs, generally just at their arch, and when first formed they seemed exactly as if they were caused by the saddle. For a short time they were hot and tender, but soon after became quite hard and callous. I might add that no treatment proved of any avail; for, although blistered repeatedly with Ung. Hydrarg. Bin., coupled with the administration of absorbents, still they remained just as they were in the first instance. The horse being segregated and placed under observation, would be noticed, although supplied with liberal diet, to fall away in condition, and the Schneiderian membrane generally assumed an unhealthy bluish appearance. The disease would remain in this latent state for a period varying from ten to six months, when suddenly acute symptoms would supervene. The rapidity with which the disease then progressed was amazing. One case in particular, which at present occurs to my memory, was

noticed at 6 A.M. to have œdematous swelling of the off-hind leg, with enlargement of the lymphatic glands on the inner side of the thigh. The horse was at once recommended to be destroyed, but it was 6 P.M. before the recommendation had gone through the regular channel, and the committee assembled. By this time, nearly twelve hours after the acute symptoms were first noticed, ulceration had set in, and the horse was an object of pity. The two cases to which I alluded above, and the *post-mortem* examination of which I intend to append a notice, had been affected with this kind of tumour for some time; and, although no virulent symptoms had as yet appeared, still, owing to the unhealthy condition of the animals, it was decided, on the recommendation of the principal veterinary surgeon, that it would be advisable to destroy them, and the result of the *post-mortem* examination fully bore out the wisdom of this decision.

Case No. 1 had been affected for some little time with one of these peculiar tumours, the exact seat of which I cannot now call to mind; but, as far as my memory serves me, it was situated, as in the majority of these cases, on the ribs. The horse was isolated, and fed liberally; but still he fell away rapidly in condition. The *post-mortem* examination disclosed the lungs to be very pale in colour, and over the surface, just beneath the pleura, were to be noticed isolated glanderous or miliary tubercles. None of these had acquired very large size, as this was an animal that had not been affected for any lengthened period; they were, however, noticed to be in various stages—some were grey and semi-transparent, whilst others had proceeded farther, and had undergone caseous degeneration, whilst, again, others felt as if they were filled with calcareous deposit. These were spread all over the lungs, but their lower portions were more generally affected. At this part they were larger, and evidently of longer standing. The Schneiderian membrane was slightly congested, but, with this exception, was perfectly healthy—no sign of any glanderous ulceration was to be noticed. The liver was greatly congested, and much thickening of the right lobe was observed. Tubercular deposits in all stages were to be noticed studded all over this organ, but in the right

lobe they were so grouped together as to form one mass. I am aware that some authorities are of opinion that these are not tubercles, but those to which I allude so closely resembled those found in the lungs both in form and structure, that I am of opinion that only as such can they be considered. Some of the mesenteric glands were enlarged. The spleen and kidneys were healthy. The heart showed signs of atrophy. The costal tumour appeared fibrous, and no change or degeneration was to be noticed in its centre.

Case 2 had been affected for a lengthened period with a hard circumscribed tumour on the wing of the atlas. This horse was one to which I before alluded as having been placed under treatment. Absorbents were given, and the tumour repeatedly blistered, but still no diminution in size was observable. The *post-mortem* examination in this case showed the lungs to be affected with the glanderous tubercles—the right more so than the left; in the former they were larger and filled with caseous matter, whilst in the left they appeared as small hard nodules under the pleura. Surrounding the lower part of the trachea, at its bifurcation, was a large tumour, the outer covering of which was composed of dense fibrous material; the centre portion was filled with caseous matter, and surrounding the whole was a huge mass of tubercular deposit, which, together with the tumour, weighed 7 lbs. The pituitary membrane was highly congested, but totally devoid of any appearance of glanderous nodules. The liver, as in the former case, was the seat of extensive tubercular deposit; but in this instance the part mainly affected was the anterior surface of the left lobe. These tubercles also were in different stages—some being quite gritty when cut through, whilst others were soft and filled with caseous matter. The glands in the mesentery were much enlarged, and around one of them was noticed a quantity of grey tubercular matter. This gland was filled with caseous matter, and, in fact, had the appearance of a homogeneous mass. Surrounding it was a fibrous sac containing about two ounces of dense aluminous fluid. The tumour on the wing of the atlas was deep seated, and consisted of a dense fibrous sac extending about four inches in length. On being opened it was found to contain no liquid of

any kind, but was filled with innumerable large nucleated cells of pearly whiteness, and different shapes, although the majority were round and oval. They did not coalesce, but fell out singly. The exact nature of the tumour I could not determine, as I never remember before meeting with one of this class.

From the history of the above outbreak, it will be seen how very insidious is this form of the disease, and how careful we should be in examining horses that may at the time be occupying the same stable in which any cases may have occurred, and the cause of which may be difficult to understand. It will be readily understood that one of these affected animals permitted to occupy a stable and to associate with others, would in all probability spread the contagion, and the regiment, battery, or private stable would be decimated before, perhaps, the cause could be discovered. This form of the disease is quite as insidious and dangerous as that reported by Lydtin, Zundel, and others in your "Veterinary Science and Police."

It can no longer be a matter of doubt whether Glanders and Farcy exist in India. In fact, on the contrary, I fear that it might be said that it has taken great hold and obtained a very firm footing amongst the horses of this country. At the present time it exists in a virulent form amongst the Dak horses on the Saharunpore and Mussoorie line; and although the services of the veterinary surgeons were placed for some little time at the disposal of Government, for the purpose of attempting to arrest its progress, and notwithstanding that they worked indefatigably, still I hear that it is far from being exterminated. It is actually reported that the owners of these animals placed scouts on the road to give timely notice of the approach of either of these officers and that immediately one came in sight, the affected animals were sent into the jungle to escape observation. For the truth of this statement I cannot vouch, but coinciding so thoroughly as it does with the character of the natives, I am inclined to believe it. Labouring under such great disadvantages, and having to combat such lamentable ignorance, can it be a matter for astonishment that the disease becomes spread far and wide? My only surprise is that we do not hear of more frequent outbreaks than at present.

CASE OF PNEUMONIA IN A TIGER.

BY L. BUTTERS, M.R.C.V.S., NORWICH.

THINKING a brief account of the above might be interesting in so unusual a patient, I have ventured to send a few notes of the same. The animal was the large Bengal tigress known as "Poonah," the property of Messrs. Bostock and Wombwell, whose menagerie has lately been stationed in this city. I was called in to see her on January 3rd, and found her very ill, and presenting the following symptoms: She was sitting on her haunches, breathing quickly, and every now and then was attacked by fits of coughing; she was very dull and dispirited; there was loss of appetite, slight watery discharge from the eyes and nostrils, and the usual indications of a severe "cold" and fever. On the following day she was much worse, and on the 5th made considerable noise in her breathing. The flanks heaved very quickly, and she looked extremely ill. On the 6th the symptoms were still more aggravated: breathing very quick, with severe fits of coughing; the watery discharge from the eyes had increased. The weather was at this time very cold, with easterly winds prevailing. She was so prostrate that I went into the den and took the pulse, which numbered 170 and was weak in character. I also auscultated each side of the chest, with the following results: The respiratory murmur was very much increased, with a wheezing noise at the superior parts of the lungs, but no absence of sound at any part. The bowels were very much relaxed (the attendant had given her some castor oil when she was first noticed to be unwell). I left to be administered, Spts. æth. nit., half an ounc; Tinct. Opii., 2 drachms, morning and night, and three or four ounces good port wine two or three times a day, which was very easily administered at first. The sides of the chest were stimulated by means of sinapisms. She was comfortably propped up, and hot water cans kept constantly in the cage; we also did our best to exclude all draughts. On the 7th the pulse was 180, and I could only feel it at the heart, the jerking action of the breathing making it very difficult to count at the arteries. The respiratory sound very loud in the lungs, with bronchial sound at the inferior parts. I counted the respi-

rations, which also numbered 180 per minute. The animal made a great noise at each expiration. 8th. Condition much the same; the breathing could be heard outside the menagerie. There was dulness of the right lung, except a little tubular sound at the superior part during each expiration. I did not think she would live long, and expected to hear of a fatal termination every time I visited her. On the 9th she exhibited slight signs of improvement, lapped some eggs beaten up with milk, and seemed to take more notice of things going on around her. She also drank a considerable quantity of good beef-tea. The weather continued bitterly cold. Had her well packed up and looked after; the keeper was most attentive to her comforts, and was in every respect an admirable nurse. On the 10th her pulse was 140, and she seemed much better. There was a copious discharge from the nostrils. She did not make so much noise in breathing. 11th. About the same. On the 12th I took the temperature by placing one of Arnold's thermometers between the shoulder and chest for three minutes; it registered 99° F. She still partook of the milk, and also some bullock's fresh blood. On the night of the 13th I was sent for, with the intimation that she was worse. This I found to be the case. She was lying stretched out, regardless of the presence of anybody around her. The breathing was much worse; the pulse was 170. The weather was very cold and bleak, and very windy. It was now very difficult to administer medicine, owing to the fits of coughing; but I gave her a little Amm. carb. occasionally in a pill, and also opium in the solid form. I had to discontinue the wine and other stimulants. She went on in this manner until the night of the 16th, when I was again sent for at eleven o'clock. At that time a copious discharge of pus was proceeding from both nostrils; it had no smell. She was evidently dying. On the following day I requested Messrs. Greaves and Fleming, who were in Norwich, to look at her, and acted upon what suggestions they kindly offered, but with no avail; for on the following morning, the 18th, she died. On making a *post-mortem* examination all the viscera were found to be perfectly healthy, with the exception of the lungs. These organs were considerably enlarged, and very much consolidated; and in those portions which were not so, pus and frothy mucous

exuded from the cut surface. There was no disease of the pleura pulmonalis, but on the outside of the lung certain portions had a discoloured appearance, which, on being opened, disclosed irregularly-defined cavities containing pus. These were not numerous, and there were no indications of any chronic disease. The lungs presented, to my mind, a striking example of the grey hepatization, or purulent infiltration, described and so designated by Laennec.

[Through the courtesy of Mr. Butters, we had the opportunity of seeing this splendid tigress during her last hours. It was evident from the prostration, the spasmodic gasping breathing, and other symptoms of an unmistakable and painful character, that recovery was hopeless. What was particularly striking was the resigned condition of the poor creature, the evident gratefulness she manifested when attempts were made to relieve her, the kind of suppliant look she gave when anyone went near her, and the extraordinary docility she evinced when being handled and examined. Instead of the grand, ferocious feline of the jungles, ready to spring upon any other creature possessed of life, debility, and the distressing *besoin de respirer*, had converted her into the most gentle, grateful and pitiable of domesticated animals. The Pneumonia was undoubtedly due to the severe and protracted cold weather which this exotic from a hot country had been exposed to in a travelling caravan.]

EMBOLIC NEPHRITIS AND WORM ANEURISM IN THE HORSE.*

BY DR. LUSTIG, VETERINARY SCHOOL, HANOVER.

ON May 19, 1874, the Graf von Schwiechelt sent a six-and-a-half-year-old gelding to the Hanover Veterinary School to be treated for Colic. According to the history that was received with the horse, it appeared that, about a year previously, he was operated upon for fistula of the spermatic cord, from which time he had never regained his former liveliness. Evident signs of disease were not, however, observed until about eight days

* Translated from the "Deutsche Zeitschrift für Thiermedicine," Band 1, Heft ii. and iii. By G. A. B.

before the above date, when his appetite diminished, and the pulse became intermittent and slower than in health. On May 16, symptoms of Colic appeared, for which he was treated by a veterinary surgeon, and on the 19th he was taken to the clinic of the above-named school, there being no real signs of improvement.

When examined on this day, the pulse was 76 per minute; respirations, 16; internal temperature, 39.4° C.; appetite imperfect; behaviour quiet; urine yellow, acid reaction, with a specific gravity of 1034 at 15° R. (18·7° C.), and albuminous. Microscopically examined, a few round granular cells, and flattened epithelial cells of various sizes, with crystals of calcium oxalate, were detected.

May 20.—Pulse 60, regular and tolerably strong, the artery being normal and tense; the submaxillary vein was little filled; the conjunctivæ moist, tinged with a yellow colour; Schneiderian membrane moist, pale at its inferior part, but more cyanotic superiorly. The heart's beat was strong, and could be felt over an abnormal circumference on the left side; the sounds of the organ were not followed by any murmur; the systole had sometimes a metallic sound, and was louder than the diastole; on the right side both sounds were abnormally audible. Respirations normal, and ten in number per minute. External temperature changeable; the internal was 39·4° C. Appetite bad. Tongue moist and slightly furred. Fæces soft, of a greenish colour, and neutral reaction. Urine yellow, slightly filamentous, acid, free from albumen; specific gravity 1028 at 16° R. (20° C.) Prepuce œdematous and swollen. Spermatic cord thickened; its superior end could not be felt; inferiorly there was a fistulous opening. By examination per rectum, a swelling could be felt in the neighbourhood of the bladder, but its anterior border could not be distinguished.

I considered this swelling to be a new formation, in connection with the champignon, from its immovableness and its projection into the pelvic cavity. To this, also, was attributed the colicky pains, and, therefore, an unfavourable prognosis was arrived at.

21st.—In the same condition.

22nd.—Pulse, 60; respiration, 12; temperature, 39·1°C.; appetite

impaired; symptoms of Colic present. With regard to treatment, I may mention here, to avoid repetition, that it was always symptomatic, and directed with the object of opening the bowels; therefore, doses of natrium sulphurium, alternated with those of aloes, were administered. Urine bright orange-colour, turbid, slightly filamentous, alkaline, slightly albuminous, sp. gr. 10·32 at 19° R. (23·7°C).

23rd.—Animal again quiet. Appetite improved. Purging. P. 54. R. 10. T. 39·3°. Urine dirty orange-colour, turbid, gelatinous, non-filamentous, non-albuminous. Sp. gr. 1047 at 13° R. (16·7° C).

24th.—No change. Urine dirty brown, very cloudy, clotty, gelatinous, non-filamentous, albuminous. Sp. gr. 1045 at 13° R.

25th.—Griping pains. P. 60. R. 10. T. 39·2°. Urine dirty, greyish-green, very turbid, filamentous, albuminous. Sp. gr. 1036 at 14° R. (17·5° C).

26th.—P. 48. R. 10. T. 38·8°. Appetite good. Urine dirty, dark yellowish-green, very cloudy, filamentous, alkaline, albuminous. Sp. gr. 1033 at 15° R. (18·7° C).

27th.—P. 54. R. 10. T. 39·2°. Urine as it was on the 26th, with the exception that its sp. gr. was 1046 at 17° R. (21·3° C).

28th.—Essentially the same. Urine dirty yellow, turbid, somewhat filamentous, alkaline, traces of albumen. Sp. gr. 1038 at 13° R. Microscopically: crystals of calcium carbonate and oxalate were found, as well as numerous granulated and mostly round cells of various sizes.

29th.—P. 44. R. 9. T. 38·1°. Urine dirty orange-colour, slightly filamentous, alkaline, with traces of albumen. Sp. gr. 1035 at 18° R. (22·5° C). The above-mentioned round cells were very few.

30th.—No change. Urine reddish yellow, turbid, non-filamentous, alkaline. Sp. gr. 1038, at 11° R., with traces of albumen.

31st.—Urine bright orange-colour, cloudy, non-filamentous, alkaline. Sp. gr. 1038 at 20° R. (25. C.)

June 1st.—P. 40. R. 10. T. 37·9. An examination per rectum discovered the swelling previously described to be considerably smaller, and fluctuating in its centre. Urine dirty yellowish-green, turbid, filamentous, alkaline, albuminous. Sp. gr. 1028

at 19° R. Crystals of calcium carbonate and oxalate, also granular round cells, and small granular globular bodies, together with diaphanous epithelial cells having a similar form, were detected by the microscope.

This examination at first led to the supposition that an abscess had probably formed, and that a discharge of pus had taken place, either into the bladder or into the intestines, after a previous union of the parts involved had been effected. The bladder could not be felt; but on passing the catheter, and filling that viscus with water, it was easily ascertained to have no connection with the swelling; so that this, together with the conditions of the urine, proved this supposition to be unfounded. According to our knowledge of diseases of the kidneys of the horse, I was now at a loss to give an explanation of the morphological elements found in the urine. The presence of the albumen in the urine was, until now, attributed to abnormal circulation, caused by the œdema of the prepuce, the fistulous spermatic cord, and the above tumour or abscess. But the presence of numerous cells in the urine could not be reconciled with my interpretation, and I was forced to accept the probability, although with some hesitation, of a disease of the kidney, in order to account for these morphological elements; yet I was not able to bring this into harmony with the phenomena of Colic and its causes.

2nd.—P. 46. R. 12. T. 38·9°. Urine dirty yellow, turbid, slightly filamentous, alkaline, albuminous, with sp. gr. 1020 at 20° R. By means of the microscope the same elements, though fewer in number, were seen. The systolic sound of the heart was now somewhat deeper than the diastolic.

3rd.—P. 48. R. 15. T. 39·2°. Appetite improved. Fæces had an acid reaction. Urine yellow, watery, slightly cloudy, non-filamentous, alkaline, non-albuminous, very few round cells, and flattened epithelial cells. Sp. gr. 1003 at 25° R. (31·3° C).

4th.—P. 48. R. 24. T. 38·8°. The first sound of the heart weaker than normal, but louder than the second and metallic sound. When percussed on the left side the animal coughed twice, the cough being weak and moist. Tympanitic and dull sounds were found in varying degrees, and close to one another.

Auscultation gave no result. Appetite small. Urine of a yellow colour, almost clear, slightly acid, filamentous, alkaline, albuminous, and sp. gr. 1020, at 20° R. A few granular round cells and crystals of calcium carbonate and oxalate were present.

From these indications Metastatic Pneumonia was diagnosed, and this was supposed to be due to the swelling in the pelvic cavity—that is, of the spermatic cord.

5th.—P. 46. R. 20. T. 38·5°. Urine orange-coloured, turbid, slightly filamentous, alkaline, albuminous; sp. gr. 1027 at 17° R. It presented much the same appearance under the microscope until death took place, except that the cells were fewer on some days than others, but they were never very numerous.

6th.—P. 44. R. 18. T. 38·7°. Urine orange-coloured, turbid, filamentous, alkaline, albuminous; sp. gr. 1022 at 19° R. (23·7° C).

7th.—P. 46. R. 22. T. 38·6°. Urine yellow, turbid, non-filamentous, alkaline, and albuminous.

8th.—P. 36. R. 18. T. 38·5°. The pulse of the carotid artery (not the jugular vein) was visible at the neck, and on auscultation it was found to be synchronous with the diastole, and gave an audible sound. The submaxillary vein was abnormally distended, but not tense; in front of the breast the systolic and diastolic movements could be seen. The diastolic sound of the heart was somewhat stronger than previously, but had a weak metallic ring. On both sides percussion gave isolated, dull sounds, but on the superior part of the right side there was a distinct tympanitic resonance. Percussion on either side caused a weak faint cough. Urine yellowish, non-filamentous, alkaline, albuminous. Sp. gr. 1020 at 17° R.

With regard to the phenomena presented by the circulatory apparatus, we could partly account for them by the Pneumonia; for in consequence of the disordered condition of the digestive organs, the heart was very weak from want of proper nourishment, and was therefore not able to overcome the obstruction to the circulation in the lungs caused by the Pneumonia. The result was that the venous system became congested, a circumstance demonstrated by the distended submaxillary vein and

the venous movement seen in front of the chest; but no satisfactory physiological explanation could be given for the other phenomena which the heart and vessels presented.

9th.—P. 38. R. 16. T. 38·4°. Urine yellow, turbid, somewhat filamentous, alkaline, and albuminous. Sp. gr. 1020 at 25° R.

10th.—P. 40. R. 20. T. 38·8°. Urine yellow, turbid, slightly filamentous, and albuminous; sp. gr. 1020 at 21° R. (26·3° C). The swelling could no longer be detected by examination per rectum.

11th.—P. 40. R. 16. T. 38·3°. Urine yellow, turbid, slightly filamentous, strongly acid, albuminous; sp. gr. 1032 at 13° R.

12th.—P. 38. R. 16. T. 38·2°. Urine yellow, very cloudy, somewhat filamentous, strongly alkaline; sp. gr. 1032 at 13° R.

13th.—P. 38. R. 14. T. 38·3°. Appetite continued good. Urine yellow, very turbid, filamentous, alkaline; at 14° sp. gr. 1029, and albuminous.

14th.—P. 36. R. 12. T. 38·2°. Urine yellow, very turbid, filamentous matter in exceedingly small quantity, strongly alkaline, albuminous. Sp. gr. 103° at 11° R. (13·7° C).

15th.—P. 36. R. 12. T. 38·2°. Urine sp. gr. at 15° R. 1026; otherwise the same as on the 14th.

16th.—P. 38. R. 11. T. 38·2°. Urine of a bright orange-colour, turbid, filamentous, alkaline, albuminous. Sp. gr. at 15° R. 1021.

17th.—P. 34. R. 12. T. 38·1°. Urine yellow, turbid, slightly filamentous, alkaline, albuminous; at 16° R. sp. gr. 1027.

18th.—P. 40. R. 16. T. 38·6°. Urine yellowish, very cloudy, filamentous, alkaline, albuminous; sp. gr. at 17° R. 1037.

19th.—P. 38. R. 14. T. 38·5°. Urine of a dirty orange-colour, turbid, non-filamentous, alkaline, albuminous. Sp. gr. 1038 at 13° R. (16·3° C).

20th.—P. 38. R. 12. T. 38·3°. Urine dirty yellow, very turbid, slightly filamentous, alkaline, albuminous. Sp. gr. 1033 at 13° R.

21st.—P. 40. R. 12. T. 38·2°. Urine dirty yellow, turbid, filamentous, alkaline, albuminous. Sp. gr. 1025 at 19° R.

22nd.—P. 38. R. 14. T. 38·7°. Urine yellow, turbid, faintly filamentous, alkaline, albuminous. Sp. gr. 1011 at 20° R.

23rd.—P. 40. R. 16. T. 38·3°. Urine yellow, turbid, filamentous, alkaline, albuminous. Sp. gr. 1015 at 16° R.

24th.—P. 36. R. 16. T. 38·6°. Urine of a grey-yellow colour, turbid, non-filamentous, alkaline, and albuminous. Sp. gr. 1026 at 14° R.

25th.—P. 40. R. 16. T. 38·8°. Urine yellow, turbid, filamentous, alkaline, albuminous. Sp. gr. 1034 at 16°.

26th.—P. 40. R. 20. T. 38·9°. The first sound of the heart had a distinctly metallic ring, and was louder than the second. The dull sound was very plainly heard in places on percussion; it once occasioned cough. From the above it was decided that a new lobular disease of the lung, though to a slight degree, had occurred. Urine yellow, turbid, scarcely any filamentous material present, alkaline, traces of albumen. Sp. gr. 1026 at 14° R.

27th.—P. 44. R. 20. T. 38·8°. Urine of a slight reddish-yellow colour, turbid, non-filamentous, alkaline, albuminous. Sp. gr. 1028 at 13° R.

28th.—P, 44. R. 30. T. 38·8°. Urine yellow, turbid, non-filamentous, alkaline, albuminous. Sp. gr. 1027 at 14° R. (17·5° C).

29th.—P. 40. R. 20. T. 38·2°. Urine yellow, turbid, filamentous, neutral, albuminous.

30th.—P. 40. R. 16. T. 38·5°. Colicky pains very violent. Urine yellow, turbid, filamentous, alkaline. Sp. gr. 1034 at 15° R. (18·7° C.)

July 1st.—P. 40. R. 12. T. 38·3°. Urine orange-coloured, turbid, filamentous, alkaline, scarcely any traces of albumen to be detected. Sp. gr. 1036 at 18°. (22·5° C.)

2nd.—P. 48. R. 18. T. 38·5°. Symptoms of pain less violent. The systolic sound of the heart louder than the diastolic, and has a metallic ring. Urine reddish-yellow, turbid, non-filamentous, alkaline, slightly albuminous. Sp. gr. 1034 at 18°.

From the 3rd to the 6th the conditions were much the same. Appetite good. Examinations of urine yielded the following results:—

3rd.—Yellow, turbid, slightly filamentous, alkaline, and very slightly albuminous. Sp. gr. 1030 at 20°.

4th.—Yellow, turbid, flaky, alkaline, albuminous. Sp. gr. 1033 at 20° R.

5th.—Orange-coloured, cloudy, filamentous, alkaline, free from albumen. Sp. gr. 1043 at 20° R.

6th.—Yellow, very turbid, non-filamentous, alkaline, albuminous. Sp. gr. 1048 at 16°. (20° C.)

7th.—P. 44. R. 20. T. 38°. Urine greenish-black, turbid, non-filamentous, alkaline, with traces of albumen. Sp. gr. 1045 at 20° R.

8th.—P. 40. R. 18. T. 38°. Urine dirty yellowish-grey, very cloudy, gelatinous, thick, non-filamentous, alkaline, slightly albuminous. Sp. gr. 1046 at 18° R.

9th.—P. 46. R. 52. T. 38·4°. Artery tense, vein distended. By auscultation at the heart a prolonged blowing, systolic sound was heard. The systolic sound was somewhat louder than the diastolic. The animal maintained a stretching or extended position, as if about to micturate; it groaned and evinced symptoms of pain. Urine of a dirty brown-colour, turbid, non-filamentous, alkaline. Sp. gr. 1045 at 19° R. Traces of albumen were present.

The great number of respirations per minute stood in no relation to that of the pulse and increase of temperature; therefore, taking into consideration the above phenomena, it was considered to be due to the circulatory apparatus, for no other cause could be detected. The frequency of the respirations was partly attributed to the abdominal pain.

10th.—P. 44. R. 32. T. 38·4°. The heart symptoms were the same as on the 9th. The submaxillary veins were not tense, but the pectoral, brachial, and posterior saphena veins were greatly distended. At the inferior part of the jugular a venous pulse was distinctly visible. The beats of the heart were audible on both sides, without the ear being placed close to the chest. The mucous membrane was strongly injected. Urine grey, turbid, filamentous, alkaline, traces of albumen. Sp. gr. 1040 at 20° R.

11th.—P. 44. R. 34. T. 38·4°. Urine reddish-brown, with

a thick, flaky, greyish-yellow precipitate; it was also turbid, non-filamentous, alkaline, with traces of albumen. Sp. gr. 1047 at 16 R.

12th.—P. 60. R. 32. T. 38·6°. Appetite bad. Urine dirty yellowish-brown, turbid, flaky, alkaline, with traces of albumen. Sp. gr. 1042 at 16° R.

This condition remained much the same until the 16th. The urine presented the following characters on the respective dates:—

13th.—Dirty orange-coloured, turbid, alkaline, albuminous. Sp. gr. 1054 at 14°.

14th.—Dirty greyish-yellow, thick, gelatinous, turbid, alkaline, albuminous. Sp. gr. 1049 at 14° R.

16th.—P. 44. R. 18. T. 38·6°. Appetite good. Abscesses have formed on the elbow and scrotum. Urine yellow, turbid, scarcely any filamentous material present; it was alkaline, and free from albumen. Sp. gr. 1040 at 15° R.

17th.—P. 48. R. 18. T. 38·5°. Urine yellow, like yoke of egg; cloudy, filamentous, alkaline, and free from albumen. Sp. gr. 1020 at 18° R. (22·5° C).

18th.—P. 52. R. 20. T. 38·9°. Urine orange-yellow, cloudy, with traces of albumen. Sp. gr. 1027 at 18° R.

The animal remained in much the same state until the 26th. The appetite was always good, yet emaciation was progressive. The animal was continually lying, and consequently many litter sores were produced. On the 26th the patient could no longer stand, and died the succeeding night.

The following was the condition of the urine up to the 25th:—

20th.—Orange-coloured, turbid, alkaline, albuminous. Sp. gr. 1042 at 15° R.

21st.—Yolk yellow, turbid, with a white precipitate, alkaline, with traces of albumen. Sp. gr. 1032 at 20° R. (25° C).

22.—Superior layer reddish, and tolerably clear, with a pale-yellow precipitate; turbid, alkaline, albuminous. Sp. gr. 1040 at 15° R.

23rd.—Bright yellow-colour, flaky and cloudy precipitate; the superior layer reddish and tolerably clear, alkaline, with traces of albumen. Sp. gr. 1037 at 15° R.

24th.—Yellow, turbid, slightly filamentous, alkaline, with traces of albuminous matter. Sp. gr. 1020 at 16° R.

25th.—Dark-yellow, turbid, alkaline, albuminous. Sp. gr. 1025 at 16° R. (20° C).

AUTOPSY.

Eight hours after death.—On the scrotum was an ulcerated spot, which led, in the course of the thickened spermatic cord, to an abscess.

Between the superior and inferior layer of the colon, there was a sac about 25 centimeters long and the same in breadth, which was completely filled with ingesta and caseous pus. This was connected with the superior colon by means of two openings the size of hens' eggs, so that a free communication was established between the colon and the sac.

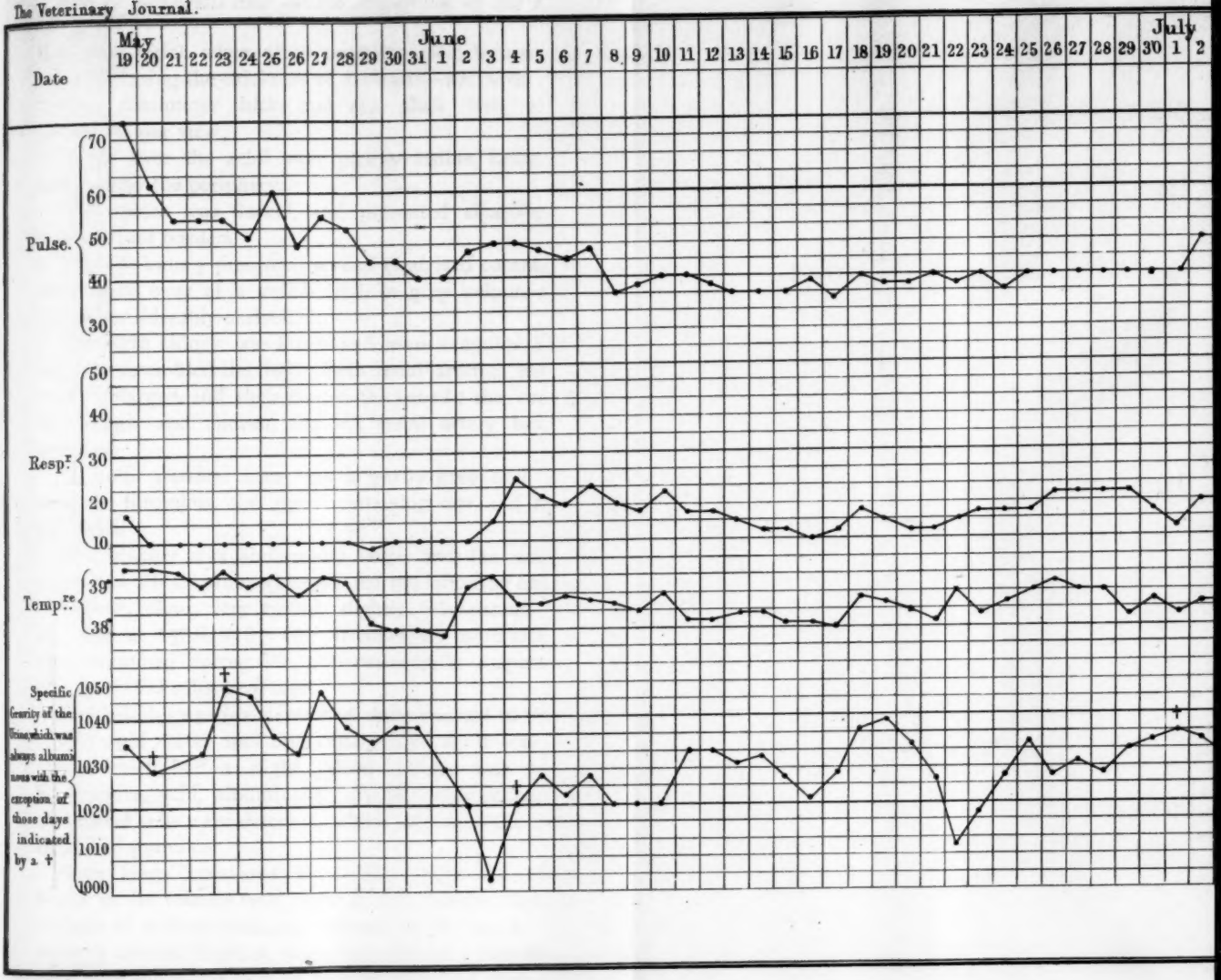
The sigmoid flexure of the colon had become adherent to the bladder, but no considerable thickness or new formation was present at the union.

There was a grey and red-coloured thrombus situated in the anterior mesenteric artery; the walls of the artery itself were considerably thickened, the *tunica intima* being rough and fissured. There was likewise a thrombus in the superior colic artery; this was of a greyish red-colour, and the vessel was also thickened and rough at the point where the thrombus was situated. Farther down the course of the artery, thrombi of a softer consistence were present. The same was the case in the ileo-cæcal artery.

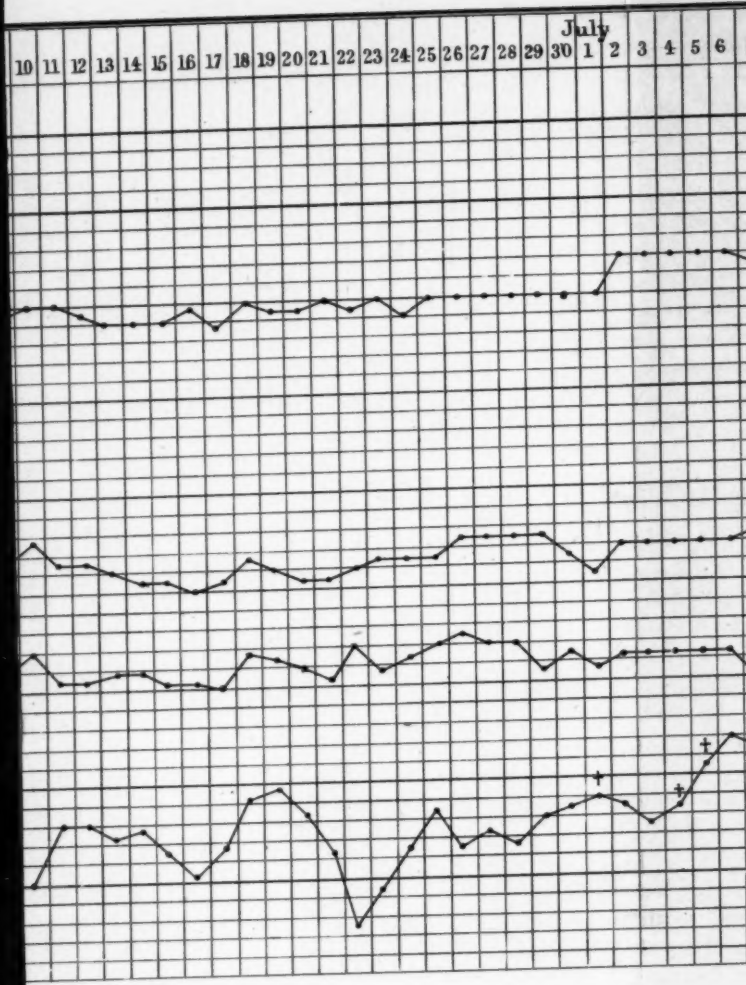
The superior cœlic artery was so interrupted by the above-mentioned sac, that its walls ended in a *cul-de-sac* on each side.

There were two enlargements, the size of a man's fist, in the neighbourhood of the superior mesenteric artery, which were connected with the undermentioned abnormal veins, so that they might be said to be a continuation of the same. The colic veins had a nodulated appearance, and the greater portion of them had become metamorphosed into a cord-like mass; this, on section, presented, in some parts, a firm, fibrous, greyish-yellow texture, partly grown to the walls of the vein, in other parts it was of a caseous, friable nature.

The above-mentioned swelling had dry, caseous, crumbling



Lustig. Embolic Nephritis.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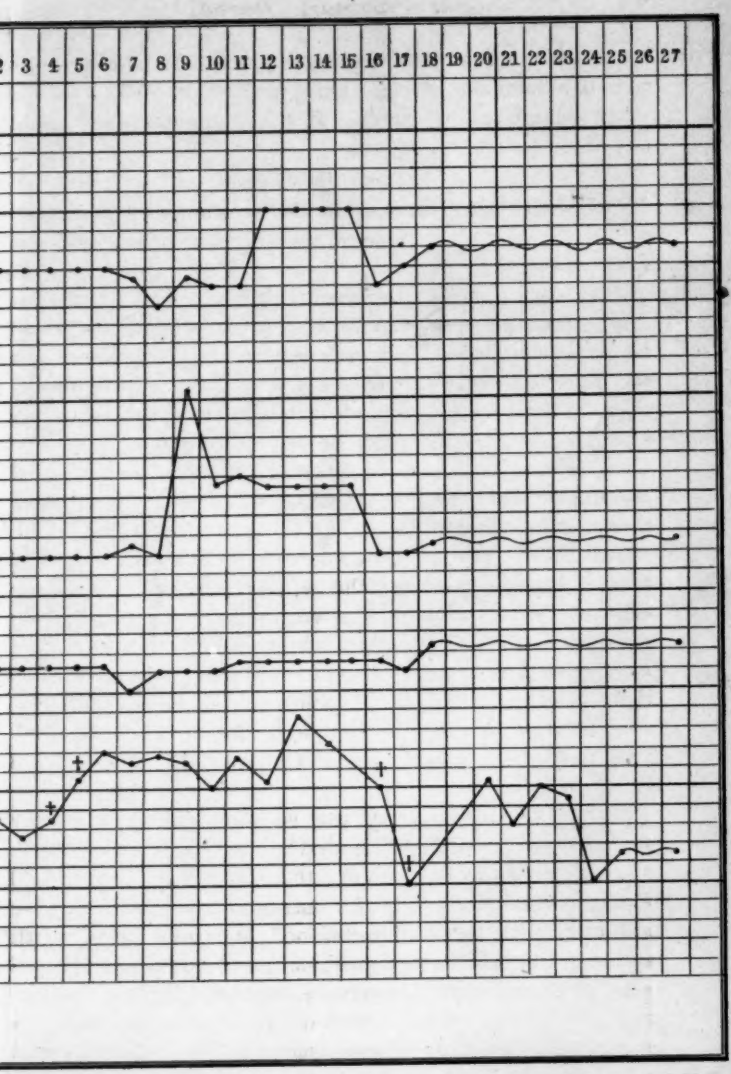

Papyrotype, S. M. E.

contents, which, when acted upon by spirit, became dissolved; thus disclosing the thickness of its walls—which in places were half a centimeter thick, and also their fatty and fissured *intima*, to our view.

In the liver the acini were plainly visible, being of a grey colour near the periphery.

The spleen was flaccid, and presented cicatrices on both surfaces and borders.

The left kidney presented several cicatrized contractions; the other parts were of a yellow, red, or grey colour, and on the whole considerably shrivelled.

The right kidney was firmer and more sanguine, but in other respects resembled the left. Both renal arteries were aneurismally enlarged, and their tissues thickened; the *tunica intima* was rough and uneven, the left renal artery being already calcified.

In both arteries there was a partly grey and partly red-coloured thrombus, the right containing one and the left two strongyli.

The bladder was abnormally large, and the walls thin; it contained a little urine, which offered the following characters:—

Yellow colour, very turbid, slightly filamentous, acid. Sp. gr. 1029 at 15° R. (18·7° C). It contained more albumen than that examined during life. Microscopically inspected, round and epithelial cells were seen.

The bladder was (as mentioned above) united to the colon.

The right ureter was abnormally dilated; it was filled with urine, which had a slight yellow colour, was turbid, very filamentous, acid, albuminous. By the microscope, epithelial and round cells were detected, which presented the most varied sizes, and granules.

Both lungs contained air. The right was filled with blood in its inferior half, firm in its texture, and presented nodules of various sizes and firmness to the touch. The most recently-formed nodules, when cut, offered a cuneiform shape; they were somewhat firm in texture and of a dark-red colour. The older ones were of a grey-red or grey-yellow colour, and dry and firm; they were round in shape, and encapsuled in a

fibrous layer, and their contents were of a caseous consistence, which in some cases was brittle and more or less dry.

The anterior lobe of the left lung contained many lobular and nodular swellings, which were partly purulent and partly dense and fibrous.

In the pulmonary artery of the left lung there was a thrombus about three centimeters long, yellowish white externally and red internally, and tolerably firm. Fresh thrombi had formed on both sides, and these were partly red and partly yellow in colour.

The right side of the heart was very much dilated. Its walls had a thickness of about one and a half centimeters.

The left side was hypertrophied.

The endocardium was somewhat red and rough, especially about the level of the *musculi papillares*, and on the anterior surface of the mitral valve there was also a fibrous mass, about the size of a lentil seed.

(*To be continued.*)

Editorial.

THE POSITION OF COMPARATIVE PATHOLOGY IN BRITAIN.

Comparative Pathology cannot claim a home in Britain; for though it receives a certain amount of study by some members of the profession, yet beyond their ranks it can scarcely be said to be recognised; and those veterinary surgeons who have done their utmost to bring it into notice, and have spared no efforts to demonstrate its value to medicine in general, are too few to produce any perceptible influence in promoting its general recognition. Since the days of John Hunter, there have, it may truly be said, been no students of human medicine who have ventured into the larger domain of comparative pathology in these islands; and so it happens, doubtless, that human and veterinary pathology have made so little progress among us. The history of medicine gives us manifold proofs that the physicians of many centuries preceding our own, were not satisfied with studying the maladies of their own species, but also endeavoured to learn as much as they possibly could of those to which the lower animals were liable; and in this way they acquired a much more comprehensive knowledge of pathology in general, and were better qualified for their more special

task, than they who merely studied the disorders of the higher animal—man.

It is difficult to discover why comparative pathology should be held in such low esteem in Britain, as to be utterly ignored—as if it were something degrading to acknowledge acquaintance with it. In the ranks of the medical profession there is not one who can lay claim to the distinction of comparative pathologist—though there is no scarcity of comparative anatomists of various grades, and though comparative pathology must be of far greater value to the medical profession than comparative anatomy.

This neglect of comparative pathology in this country is not only injurious to the progress of medicine—human and veterinary—but it is also prejudicial to the public interests, not only from a sanitary and medical point of view, but also so far as the suppression of contagious diseases among animals is concerned. For instance, when the Cattle Plague invaded England in 1865, though the medical profession knew nothing whatever of the disease or its history, yet it was the most formidable and successful opponent of those sanitary measures which could alone rid us of the scourge; and the immense losses the country then suffered were due to the mistaken notion of the faculty, that the malady was "spontaneously" generated in the London cowsheds, and that it could be *cured*. And even with this terrible warning before it, we still witness the same exhibitions of uneducated meddlesomeness at times, and particularly in the matter of contagious diseases among animals. The most recent instance of this occurred only a few days ago, when medical men—one of them a F.R.S., even—wrote to the public papers to suggest that the presence of Contagious Pleuro-pneumonia among American cattle was owing to the hardships experienced on board ship!

Not only is comparative pathology neglected as a study by medical men,—and in this an important portion of their curriculum is omitted,—but when they are compelled to notice some particular disease of animals, it is rare indeed that they trouble themselves with inquiring as to what is already known with regard to it, or what members of the veterinary profession have done towards its elucidation. It is quite true that we have had very few among us—indeed, scarcely any—to worthily represent our profession in this direction; for pecuniary and other motives of what we would call the "baser" kind, have been too predominant with those who might, from their position and opportunities, have placed our science in a very different position to that which it now occupies. Nevertheless, this is no reason why what has been accomplished should be utterly ignored, or why students of veterinary medicine should be absolutely despised by those who evidently have no acquaintance with what they have done, and what they have had to contend with.

This is not the first time we have had to complain of the neglect of comparative pathology by medical men, and of the low esteem in which they hold its students. And on the present occasion we have good foundation for our complaint, when we review the proceedings at a

recent meeting of the Pathological Society of London, reported in our last issue, in which the relations of Mammitis in cows to Diphtheria in man were discussed, and when a paper on "Garget," read by a gentleman at that meeting, was asserted to "afford all the present available knowledge on the subject." Judging that the time had come when to be silent, was to appear indifferent to the fate of a branch of science to which we have devoted so many years study, as well as to be careless of the reputation of a profession whose welfare and good name is dear to us, we penned the following letter, which appeared in *The Lancet* for January 25th; and we are glad to learn that it has attracted some attention in the proper quarter, as it may be the means of effecting something of a reconciliation between the two departments of medicine, and promoting the advancement of comparative pathology in this country.

"GARGET" AND DIPHTHERIA *v.* COMPARATIVE PATHOLOGY.

To the Editor of THE LANCET.

SIR,—I have read your report of the meeting of the Pathological Society, at which the relations between the various morbid conditions known to cowmen as "Garget," and Diphtheria, were discussed, and also the editorial remarks on the same subject in *The Lancet*. I am indeed greatly surprised at the extremely meagre amount of knowledge displayed in the investigation of this supposed relationship, and am especially astonished at the way in which the researches of members of the veterinary profession are ignored in a matter to which such great importance was attached at the meeting above alluded to. It would almost appear that Messrs. Power and Smee had discovered a new bovine malady, and that there was something terribly mysterious and unfathomable about it. Mr. Power starts the alarming notion that certain serious and widely extended outbreaks of Diphtheria in man may be due to this cowkeeper's "Garget"; and yet, after expending considerable time and patience in attempting to trace the origin of these epidemics, he does not seem to have troubled himself to ascertain what we really know of "Garget," or what it is. He confesses that he was only able to glean information from *non-medical* witnesses! Surely, in launching such a formidable hypothesis—one calculated to give rise to grave anxiety, or even panic, among the consumers of milk—such a competent member of the medical profession would have thought it necessary to learn all he could as to what this so-called "Garget" is, and whether it was likely to be the real source of the Diphtheria visitations.

And Mr. Smee does not appear to have made himself very well acquainted with the subject before bringing his paper before the Pathological Society; notwithstanding the fact that he instituted inquiries in different parts of the country, and obtained replies from a number of people whose evidence is so contradictory, and betrays so confused a notion as to what they were writing about, that one is forced to conclude that they also were *non-medical* witnesses. Seeing the mystification and confusion existing in the minds of the authors of the two papers read on January 7th, and itself evidently no better informed, we can scarcely wonder that the Society should appoint five *medical* men to make inquiries into the nature, etc., of this Garget.

I would not, perhaps, have requested you to publish anything from me relating to a matter in which it is only too apparent that veterinary science is *de trop*, and its students ignored, had not Mr. Smee rather gone out of his way to assert that he soon found veterinary surgeons knew little of the subject

and that works on veterinary medicine contained very little information about the disease.

Those members of the veterinary profession in this country who have done their best in promoting the advancement of comparative pathology, have every and great reason to complain of the almost systematic manner in which their labours are neglected or ignored by the sister profession when the maladies of animals are under consideration. Heavily handicapped as it has been since its advent in this country, and received none of the encouragement, countenance, rewards, Government grants, or benefactions, without which human medicine would have made but little progress, veterinary science cannot yet show that its path is likely to be much cheered, or its burthen lightened, by the older sister, who has been so greatly aided and carefully nurtured by external influences.

The disease vulgarly known to cowmen and the Pathological Society as "Garget," and to pathological scientists as Mammitis or Mastitis, is one of the most frequent to which bovine animals are liable, and few maladies of animals have been more carefully investigated, or more often receive the attention of veterinary surgeons, notwithstanding Mr. Smee's assertion to the contrary. I do not know a work, English or Continental, on veterinary surgery or cattle pathology, published during this century, which does not treat more or less fully on it, and few, indeed, that I am particularly acquainted with which do not contain more detailed and trustworthy information than is to be gleaned from Mr. Smee's paper. I therefore cannot think that that gentleman was serious in the statements he made as to veterinary surgeons and veterinary literature. If he was, then I can only say that the statements are not supported by facts. With regard to literature, I might give a long list of veterinary authorities who have studied and described the various forms of Mammitis, but I will content myself with referring to chap. 9 of my work on "Veterinary Obstetrics," published more than a year ago, in which it will be seen that Mr. Smee's and your own assertions do not fairly represent the case. With regard to the condition of the milk in Mammitis, in addition to what I have said in the work just alluded to, I would also refer to my manual on "Veterinary Sanitary Science and Police," vol. ii., p. 579, art. "Inspection of Milk." And for a long report on a form of Infectious Mammitis in the Cow, I may call your attention to THE VETERINARY JOURNAL (of which I am editor) for November, 1878, p. 335.

A perusal of the evidence therein adduced will testify that not only have the different kinds of Mammitis been carefully observed and investigated by those who understand the diseases of animals, and are therefore alone competent to treat of them, but that this malady is far from being the trivial and imperceptible disease which Messrs. Smee and Power would have the public believe. That any of the forms of Mammitis will produce Diphtheria in animals—and especially sucking animals—there is not a tittle of evidence to show; and that Diphtheria in the human species may be due to milk drawn from glands affected with Mammitis is unsupported by facts of any kind. Ordinary Mammitis is a common disorder all over the country—indeed, over the world, and large cowsheds are seldom free from it. Diphtheria is, comparatively, and fortunately, a very rare disease. Even during outbreaks of infectious Mammitis, some of which have been extensive and serious, and have continued for a long time, no unusual disorders have been reported as appearing among the people who consumed the milk in the localities in which it was distributed. And in the outbreak recorded by Mr. Power there is all but everything wanting to establish any connection between Mammitis and Diphtheria. What he gives is even less than a mere coincidence, and it is to be regretted that the epidemic should be publicly ascribed to the milk without better and, indeed, the clearest evidence. Much needless

alarm is excited, and sanitary science is certainly not benefited, by the promulgation of such unsubstantial hypotheses.

Some years ago you allowed me to draw attention to the very unsatisfactory position of comparative pathology in these islands, and the injury medical science, no less than the public interests, suffered thereby. Since that time the position has not been improved, so far at least as the medical profession is concerned; and I think I may say, from personal knowledge, supported by such examples as the Pathological and other Medical Societies, as well as medical literature, at times afford, that in no country in Europe do medical men, as a rule (there are, of course, exceptions), know less of the diseases of animals than in our own, and this absence of knowledge exposes them to inconvenience and even ridicule. That a body of medical gentlemen of such acknowledged ability as those who compose the Pathological Society should know nothing, or next to nothing, of a very ordinary and frequent disease affecting the lacteal apparatus of an animal which stands in such close relationship to man as a food-producer, and that it should depute five of its number, who can know but little of animal disorders, to investigate the malady, may well provoke a smile in the ranks of such an assembly, for instance, as the Paris Academy of Medicine, where the value of comparative pathology is understood, and where Bouley, Larcher, Leblanc, Colin, and other veterinarians take their place as members and authorities in their own special department of science.

On behalf of medicine, human and animal, may I not ask if the time has not arrived when that harsh and inflexible barrier, behind which medical men in this country, as a body, have so long fixed themselves, to their great detriment, be thrown down, and the claims of comparative pathology to recognition be admitted? Surely, if physicians and surgeons will discuss the diseases of animals, especially in relation to the public health, they should possess some knowledge of these diseases! The wide chasm which has hitherto been allowed to separate human and animal medicine in Britain must be abridged some time or other. Why not now? I do not know a Continental university which does not have a chair of Comparative Pathology; there is nothing of the kind with us. If a knowledge of natural history, zoology, or comparative anatomy is considered necessary for medical students, and if our universities and medical schools have chairs for instruction in these subjects, it is surely of far greater moment that they should have chairs of comparative pathology—a subject of daily increasing importance. Establish these chairs, recognise the fact that human and animal pathology are but sections of one great subject, and soon we shall be spared the appointment of committees to investigate animal disorders; the composition of these committees, reminding one of the tragedy of Hamlet *minus* the Prince of Denmark, and such unproductive discussions as we are now familiar with in medical societies. I cannot see any reason why medical men in this country should not be as well acquainted with comparative pathology as their Continental *confrères*, nor yet why they should ignore the fact that there are students of veterinary science who can claim a right to be heard in defence of that science. Medical men in England can well afford to be unselfish and the opposite of ungenerous. That they sometimes appear severely conservative and narrow-minded towards these students, is possibly due to misapprehension and a desire to keep all medical knowledge in their own hands.

I do sincerely trust that you, sir, will lend your aid in promoting a knowledge of comparative pathology in our medical schools. This knowledge is sadly needed, and there is no reason why it should be denied the votaries of medicine.

I have the honour to be, sir, yours most obediently,

GEORGE FLEMING, F.R.C.V.S.,
2nd Life Guards.

January 21st, 1879.

CONTAGIOUS PLEURO-PNEUMONIA AMONG AMERICAN CATTLE.

IT will not surprise those who are acquainted with the history of contagious diseases in animals, to learn that cargoes of American cattle affected with Contagious Pleuro-pneumonia have been disembarked at Liverpool. In this journal we have repeatedly pointed out the fact that we were exposed to importations of contagion from the other side of the Atlantic. So long ago as July, 1878, and so recently as our last issue (p. 95), we insisted on the necessity for watching the cattle traffic with America; but before that period, and while the Contagious Diseases Bill was before Parliament, we wrote to *The Times*, and also furnished both Earl Fortescue and Colonel Kingscote, with irrefragable proof that the disorder did exist in the United States, that these should be placed on the footing of an infected country and scheduled accordingly, and that if they were not, we ran great risk of receiving shiploads of the disease therefrom. The information we then gave to the above-named legislators was imparted to the two Houses of Parliament, but with that extraordinary perversity, incredulity, or whatever else it may be which has distinguished the Privy Council in its dealings with animal plagues, America was allowed to enjoy the privileges of a clean country; and now, after three diseased cargoes have reached us, it is discovered that we were right after all. We claim but little credit for what we have done in this matter, as any one who had devoted himself to the study of contagious diseases could have predicted as easily as ourselves what has actually occurred. But, unfortunately, we have stood alone in pointing out the great necessity there is for pursuing this study in our veterinary schools and by practitioners, and we have even been sneered at by those who are mainly, if not altogether, responsible for the terrible ravages these scourges have produced in this country, and who have even had the temerity to confess that they did not see how a knowledge of the history of contagious diseases could prevent their occurrence!

It has been known for more than thirty years, that the disease in America was positively the same as that with which we are so painfully familiar, and any one who cares to refer to the splendid and elaborate "Report of the Commissioner of Agriculture on the Diseases of Cattle in the United States," published at Washington in 1871, will have no reason to doubt the accuracy of our statement, or to exculpate the Privy Council for a grave error of omission or commission, which will happily be repaired on the third day of the present month.

It is more than strange that the United States Government lost sight of this report, and that they allowed their country to be declared free from infection when our Government was discussing the question as to what countries should be scheduled; and even when diseased cattle arrived in this country, that they should still plead ignorance, and remit the question to the consideration of several professional gentlemen of eminence and authority, whose reports are only a re-echo of our own.

In cattle-dealing, as in horse-dealing, conscientious scruples appear to be in abeyance when contagious diseases or other troublesome matters intervene, and governments act sometimes, we think, as individuals only too often do—regard their own interests more than those of their neighbours. And to show how little reliance can be placed upon consular reports, and how easily consuls are "gulled," the gist of the information received from them from America, when our Government discovered Pleuro-pneumonia was prevalent there, was that although a mild type of the disease was known to exist in various parts of the United States, "it is not thought to be of the malignant and infectious character which the same disease assumes in

Europe. It is disputed, indeed, that in its American form the disease is infectious at all."

Our Government has been so deaf to all representations on the subject, and the "trade" on both sides of the Atlantic had so much influence in concealing the existence of the disease, that when it was at last unmasked, it was found there was no provision whatever at Liverpool for the slaughter of the infected droves landed at its wharves, and the regulations had to be violated in order that they might be carried into effect. Further comment is unnecessary.

THE WAR IN ZULU-LAND AND THE "HORSE-SICKNESS" OF SOUTH AFRICA.

THE serious aspect of affairs in the colony of Natal has necessitated the sending out from England a force of cavalry, artillery, and land transport, with about two thousand horses—a voyage occupying about thirty days. To maintain so large a number of horses in health and efficiency, so as to enable the force to commence active operations as soon as landed, will demand all the care and attention of the nine veterinary surgeons who accompany them. But the disorders and casualities incidental to the long voyage are as nothing when compared with the losses which may befal the horses on disembarkation, from the disease known as "Horse-sickness," to which we have referred in this journal for August, 1878 (p. 100), and also in our last issue (p. 97). As we have pointed out, this serious equine malady prevails from the Orange River on the south, and as far as Europeans have penetrated from the Cape side; it has proved to be one of the greatest drawbacks to successful travelling in South Africa, and probably exists in as virulent a form in North Africa. Fortunately, however, it only prevails at a certain season, manifesting itself in some districts in November and December only, while in others again it commences about the beginning of February and continues until April, or even exceptionally into May. In Zulu-land—the scene of operations at present—February, March, and April are the dangerous months; so that the force just dispatched from this country will, we fear, not escape it entirely. However, we trust that the experienced and zealous veterinary surgeons belonging to the Zulu-land Army Corps will be successful in averting its ravages, or at least in reducing them to a very low percentage. One thing we do anticipate, and that is that our knowledge of the disease—extremely imperfect at present—will be largely increased, and that this scourge, which, looking at its hurtful influence on the prosperity of our South African Colonies, should long ago have received scientific investigation, will be made amenable to prophylactic or curative measures.

RE-ESTABLISHMENT OF VEINS OCCLUDED BY THROMBOSIS.

IN the *Progrès Médical*, Petres gives the following account of the processes by which the circulation is re-established in veins occluded by Thrombosis:—

In the first few days following obliteration the vasa vasorum dilate, the lining membrane of the vein thickens by proliferation of its elements, forming round the periphery of the clot a sheet of embryonic connective tissue, into which the vasa vasorum send numerous capillary prolongations. During this time the clot itself becomes atrophied and disintegrated, the red corpuscles lose their colouring matter, becoming yellow and granular. As the newly-formed tissue advances towards the centre of the lumen of the vessel, it

replaces the disintegrated clot until the latter is entirely absorbed, and the occlusion is maintained by the new formation. This new formation may then undergo two distinct kinds of change—(*a*) fibrous organization common in arteries and less so in veins; or (*b*) cavernous metamorphosis common in veins. This cavernous metamorphosis is the result of the incessant dilatation of the new vessels traversing the embryonic tissue, and the contraction and absorption of the partitions which separate them, until they unite to form a few voluminous canals, and at last into one common cavity. All the different stages of this process may be noticed at one time in the same Thrombus.

DETERMINATION OF SEX BY THE DATE OF CONCEPTION.

In the *Boston Medical and Surgical Journal* for September, 1878, Dr. Swift, alluding to this subject, remarks: "While studying the reproductive organs in the microscopical laboratory of Dr. Carl Heitzmann, of New York, last winter, Dr. Heitzmann advanced the following theory in regard to the determination of the sexes. The ovum represents the female element, the spermatozoa the male. We know that it requires only a few spermatazoa—perhaps a single spermatozoon—to impregnate an ovum. If an ovum becomes impregnated by a few spermatozoa, the female element will be in excess, and the result will be a female. If, on the other hand, a good many spermatozoa impregnate the ovum, the male element will preponderate, and a male will result. Now, if an ovum is high up—that is, in the ovary or at the fimbriated extremity of the Fallopian tube, probably only a few spermatozoa will come in contact with it. But if the ovum is low down, then many spermatozoa come in contact with it.

"If menstruation and ovulation are dependent the one on the other, as many authorities affirm, then the situation of the ovum may be determined by the menstrual period. During the interval between the periods the ovum is in the ovary. Just before the flow begins the ovum may be on the surface of the ovary, or in the fimbriated extremity of the Fallopian tube. As menstruation goes on the ovum descends, and the flow may entirely cease before the ovum is discharged. Then it is low down in the Fallopian tube, or even in the uterus itself.

"Now, if coition takes place during the interval between the two periods, or just before menstruation begins, the ovum being high up, only a few spermatozoa pass up the Fallopian tube and reach it; but if coition is just after menstruation, then the ovum is within the reach of many spermatozoa.

"Stock-breeders understand this. If they want a female, they put the two sexes together at the beginning of the rutting period; but if a male is desired, they wait until the female has been in heat some time.

"During my term of service in the Boston Lying-in Hospital, I had several opportunities of testing this rule, and I have collected twenty cases which bear it out. I excluded those cases where there seemed to be any doubt at all in regard to the statements, and all married women, except three, where the exact dates were given. In twelve cases the data were obtained before delivery, and in all these the sex was predicted correctly."

After giving details of these cases, the doctor adds: "I am aware that this theory conflicts with most, if not all, of the accepted theories on the subject of conception, and that the cases here presented are too few in number to establish any exact rule; but it certainly seems to me that the results obtained are extremely interesting, and would warrant a further investigation of the subject."

CAN THE MILK OF PHTHISICAL COWS PRODUCE TUBERCULOSIS?

(THE question whether the milk of cows affected with Phthisis or Tuberculosis will produce this disease in the creatures which ingest it, is of extreme importance in a sanitary and pathological point of view, and we have often brought it before the public, as well as the medical and veterinary professions, in this country. Indeed, we were the first in England to draw attention to the matter, and to urge the necessity for closely studying it. Strange to say, it has received but little, if any, notice from the medical or sanitary authorities of these kingdoms, though we hear much from them of the value of preventive and State medicine, and its neglect by the Government. In other countries, as we have shown, this silence or indifference has not existed; and the question, first raised in France and Germany, has been closely examined, experimentally and otherwise, by veterinarians and medical men, and though it has not yet been finally decided, yet it is full of interest and importance to the comparative pathologist and sanitarian. We are therefore again desirous of referring to it, and laying stress upon the necessity for keeping it in remembrance when treating of sanitary subjects; and with this object, we will from time to time notice the advances which have been made with regard to it, as we have already done, and will continue to do, in the case of Anthrax.

These remarks are intended to preface the translation of an excellent and concisely written paper with the above heading, read before the Société de Médicine Publique, by Doctor Vallin, Professor at the Val-de-Grâce Hospital, Paris, a short time ago, in which all the facts and arguments pertaining to the question are placed before us, and impartially examined.)

When my learned friend, M. Villemin, made known his early inquiries into the inoculability of tubercle, a certain number of practitioners did not fail to say and to write, "What is the use of these researches? of what advantage is it to our patients to know that we can really make them tuberculous? The smallest quantity of a good remedy against Phthisis would better serve our purpose and theirs." For a long time we have been aware of the pretentions and the disdain of those who attribute thus the monopoly of sound practice, and for whom all progress is limited, to the discovery of an empirical formula or a new drug. To these contemners of physiological and scientific researches we would reply, "That in the cowsheds of our large cities the majority of cows become phthisical; are you, therefore, quite certain that the uncooked milk, yet warm from the udder of the cow, is not capable of making those children tuberculous who are fed on it daily? If this transmission of Tuberculosis by milk were demonstrated, of what value would the long series of remedies against Phthisis be, in the face of the prophylactic indication which such a demonstration would furnish? If you deny this transmission, is your conviction founded on a sure basis, and would you not hesitate to give to your own child the milk drawn from a cow which you knew to be phthisical? If the question is not decided, if there remains the slightest uncertainty with regard to it, what danger does the public health not incur? We punish dairymen who add water to milk: what measures should we not adopt against those who sell milk capable of giving rise to such a frequent and serious malady, that of every three adults who die one perishes from tubercle?"

I hope to be able to demonstrate that these are not purely imaginary fears, nor sentimental reflections on a gratuitous hypothesis. In France, everyone denies the transmission of Tuberculosis by the milk of phthisical cows; but in nearly every other country in Europe—in England, Switzerland, Bavaria, Saxony, Prussia—the most eminent professors of the veterinary schools con-

sider this transmission, if not demonstrated, at least as probable.* And the most serious part of the business is, that those who deny it have made no experiments, while those who have experimented have transmitted the tubercle.

This simple enunciation shows that the question is worthy of attention. For my part, I shall guard myself against expressing an opinion on a subject so uncertain, and on which I am not yet fully informed; but it seems to me, that instead of expending much time in a dissertation on the question as to whether, theoretically, transmissibility is a little less probable than non-transmissibility, it would be more simple and scientific to subject some animals to experiment, and to await the result before arriving at a verdict. In this first memoir, I shall confine myself to exposing the actual state of science with reference to the subject, and to give a balance-sheet of the researches undertaken in various countries. I hope to be able to present at a later period the result of my own experiments, already commenced, but which I have not yet completed.

In France, the attempts to transmit tubercle by the ingestion of tuberculous matter itself has alone absorbed attention; those who contest the affirmative results obtained by Villemin, Chauveau, Saint-Cyr, Viseur, etc.,—those who do not admit the absorption of the virus by the digestive mucous membrane—have naturally refused to accept the result of the researches on the action of milk derived from phthisical animals. But on the latter point I only find affirmations—I do not discover any experiments. If I consult the labours of M. Colin, of Alfort, for example, I note that the ingenious physiologist has obtained no result from the ingestion by the stomach of tuberculous matter—blood, saliva, serum, or bronchial mucus; he denies the value of the experiments made by those who have been successful; he denies the virulence of tuberculous matter itself; he rejects, as contrary to the most positive scientific evidence, the absorption of the virus by the digestive mucous membrane.† But I nowhere find special mention of personal experiments made with the milk, though it is not doubtful that M. Colin should absolutely refuse to believe in any noxious influence in the milk of tuberculous cattle.

M. Reynal, in his *Traité de Police Sanitaire*, devotes a paragraph to the use of milk from phthisical animals. With the great practical sense which characterizes his book, the learned director of the Alfort School admits that this milk is not rich in solid matters, that it has only a feeble nutritive value, and is an inferior marketable commodity, but he adds—"No properly observed fact authorizes the conclusion that it has particularly injurious properties, and consequently as requiring measures to restrict its consumption.‡ In this brief chapter Reynal insists, in several places, on this innocuousness, though neither directly nor indirectly does he make any allusion to experiments which might serve as a precise base for his opinion.

M. Bouley, who himself has examined M. Viseur's cats, ‖ and who had seen the *formidable* lesions in Saint-Cyr's pigs, does not deny the effects of tubercle introduced into the digestive organs, but he limits this virulence to the tuberculous matter, and does not think of extending it to all the substance of the phthisical animal.§ He thinks there is no danger in using, as food, the fleshy parts which do not contain nodules or tuberculous glands. But in the

* [We are not aware that any veterinary professors in England have ever studied or expressed an opinion on this subject.—ED. *V. J.*]

† *Colin.* Bulletin de l'Academie de Médicine, 1873, Vol. ii., p. 557, 629.

‡ *J. Reynal.* Traité de la Police Sanitaire des Animaux Domestiques, Paris, 1873, p. 727.

§ *Bouley.* Chronique Mensuelle (Recueil de Méd. Vétérinaire, 1874, p. 181).

‖ *Ibid.* Recueil de Méd. Vétérinaire, 1873, p. 568.

face of foreign researches which we will cite hereafter, and to which he attributes great value, M. Bouley, whose mind is so largely open to progress and to new researches, expresses the greatest reserve with regard to the milk of these animals. In 1876, the Consultative Committee of Public Hygiene was consulted as to the noxiousness of milk from cows affected with Aphthous Fever, and in the learned report the Inspector-General of the Veterinary Schools drew up on this subject, he speaks of the milk obtained from phthisical cows in the following terms:—"With regard to the question of the possible transmission of Tuberculosis to the human species, by the continued use of milk from cows affected with Pulmonary Phthisis, it is of too great importance for me to treat it as a merely incidental matter. I believe that it deserves to be the object of a special study on the part of the Committee. I shall merely content myself with saying that the experiments of Professor Gerlach of Berlin, those of Professors Chauveau and Saint-Cyr, of Lyons, and finally of M. Viseur, Departmental Veterinary Surgeon, of Pas-du-Calais, on the ingestion of tuberculous matters and the effect of their absorption by the digestive organs, should cause reflection. Without attempting at present to solve the question as to the contagion of Tuberculosis, I think it is prudent to treat it as if it were a reality, and from this point of view, *that every advantage is to be derived from prohibiting the consumption of the milk of tuberculous cows.*"*

We are glad to be able to shelter ourselves beneath the authority of so competent a judge, and the preceding conclusion, which we would otherwise formulate ourselves, proves that new researches are neither useless nor inopportune.

M. Chauveau, the most ardent apostle of the transmissibility of Tuberculosis by the digestive canal, himself believes also, and for a long time, that the tuberculous matter alone will transmit the disease. "In principle," he says, "we can only transmit the malady by the diseased organs or their products." † From a phthisical cow he took a healthy non-tuberculous gland, and from it expressed some fluid the inoculation of which was sterile; on the other hand, inoculation was completely successful with the fluid from a tuberculous gland of the same animal. He does not believe that a healthy calf drawing the milk from the unaffected udder of a phthisical cow will contract the malady, but that infection will assuredly take place if there is ulceration or tuberculous degeneration of the mammary gland. ‡ Chauveau knew of cases of transmission of Tuberculosis from phthisical animals to their progeny through the medium of the milk, but he thinks the facts pertaining to other than the bovine species as not very conclusive. We shall see presently that several authors—Bollinger and Gerlach in particular—have succeeded in their experiments with calves, and that their results are in contradiction with the principle formulated by Chauveau. The learned professor of Lyons does not appear to have personally made any experiments with tuberculous milk.

After such masters, no one in France would think of venturing on researches which require a long time, are expensive and difficult, and the non-success of which can, in a manner, be predicted. In default of experiments, M. Boulay, of Avesnes, makes a judicious observation. Phthisis among cows is very common in the arrondissement of Avesnes, and the slaughter-house not being

* *Ibid.* Rapport sur une Maladie transmise à l'Homme par l'usage du Lait de Vache atteint de Peripneumonie (Recueil de Travaux du Comité Consultatif d'Hygiene Publique de France, 1877, Vol. v., p. 445).

† *Chauveau.* Séance of the Academy of Medicine of Nov. 17, 1868. Congress de Lille of 1874, p. 943.

‡ Fleming (*loco cit.*) and Van Hertsen, inspector of abattoirs at Brussels (Rec. de Méd. Vétérinaire, Vol. li., p. 181) both mention that alterations in the mammary glands of phthisical cows are rather common.

under observation, as there is no inspector, the butchers kill and dispose of all the cattle—healthy or diseased. If the milk, says Boulay, is capable of transmitting Phthisis, it would be important to compare the frequency of the disease in cows with the same malady in man in this non-inspected arrondissement, and that of Lille, where the surveillance of the abattoirs leaves nothing to be desired.* The author doubtless means it to be understood that where the abattoir is under inspection, the owners of cows are interested in having them killed whenever they exhibit the earliest symptoms of Phthisis, because at a more advanced stage of the malady they would be refused at the abattoir and sent to the knacker. The remark of M. Boulay is worthy of notice, and without overlooking the difficulty in obtaining such statistics, it is to be desired that this appeal should be listened to in his department or in similar localities.

M. Viseur, of Arras, remarks that in the country care is observed in giving the milk from the same cow to children artificially reared, and the veterinary surgeons anxiously recommend that this milk should not be obtained from cows which cough.†

Such is about the gist of the opinions given in France by the most competent authorities, as to the noxiousness of the milk of tuberculous animals.

Nowhere can I find mention made of personal experiments, but I have, on the contrary, found convincing reasoners who affirm, *à priori*, and without having made experiments, the absolute innocuousness of the flesh of such animals; for them, the doctors who suspect the milk of phthisical cows are worthy descendants of the physicians ridiculed by Molière. Let us proceed to more serious arguments.

C. Gerlach, then veterinary professor at the Veterinary Institute of Hanover, commenced his researches in 1866, soon after the appearance of the first publications of Villemin, and terminated them in 1869. In his memoir,‡ which shows that he studied the transmission of Tuberculosis by inoculation, and by ingestion in the digestive canal, he devotes a very important part to researches into the effects of feeding with the milk of a tuberculous cow. The animal was seven or eight years old, very emaciated, with short respiration, a husky cough, and dry *râles* on auscultation. It still yielded 1½ litres of milk daily, but this quantity fell gradually to 500 grammes during the last month. At the autopsy, nodules were found beneath the pleura, and very advanced tuberculization of both lungs. The experiments were conducted on two calves, two pigs, one sheep, and two rabbits. These animals took for a variable time (from 21 to 50 days), a certain quantity of this uncooked milk. At the autopsy of all of them—with the exception of one of the calves which died accidentally, and too early, of Aphthous Fever, then epizöotic—were found tuberculous nodules beneath the pluræ and in the pulmonary parenchyma, caseous masses in the mesentery, bronchial glands, etc. As an example, we will give a *resumé* of No. xii. in the memoir :—

Calf eight days old, nourished for fifty days almost exclusively on the milk of a phthisical cow—at first 1 litre per diem, and later 300 grammes, or an average of 650 grammes—amount to a total of 32 litres during fifty days. The animal's health did not appear to be markedly disturbed, and 100 days after the commencement of the experiment—50 days after the milk was withheld—it was killed. The pleuræ were found covered with false membranes studded with nodules the size of a pin's head; immediately beneath the pleura nodules protruded, varying in size from that of a pea to a millet

* Recueil de Méd. Vétérinaire, 1873, p. 578.

† Recueil de Méd. Vétérinaire, 1873, p. 885.

‡ *A. C. Gerlach.* Ueber die Impfbarkeit der Tuberculose und der Perlsucht bei Thieren sowie über die Uebertragbarkeit der letzren durch Futterung. Virchow's Archiv, 1870, pp. 290, 307.

seed, fixed in the pulmonary tissue. Only eight miliary nodules were found in the interlobular spaces ; these nodules were transparent, grey, very firm, and on section showed in the centre a more transparent part ; one of them, more voluminous, contained in the middle a small, yellow, caseous mass. There was very great tumefaction of the bronchial glands, and in the centre of these a caseous matter already infiltrated with saline deposits. The mesenteric glands were twice their normal volume, and completely transformed into caseous matter. All these lesions are identical with those observed at the commencement of Consumption in the cow, and a very careful microscopical examination fully confirmed this identity.

The other calf, which died accidentally after taking the milk for ten days, only presented at the autopsy inflammation of the small intestine, and a slight swelling and "succulence" of the mesenteric glands, such as always exists in the Enteritis accompanying Aphthous Fever. Nowhere was there any appearance of congenital tubercle.

Gerlach took care to keep, at the same time, as evidence, animals of the same species and often of the same litter, fed with pure milk, and in these no tubercles were found. It therefore appeared to him impossible to attribute to a mere coincidence the existence of such lesions in five animals of different species, especially as spontaneous tuberculization is very rare in the sheep, and is scarcely known in the pig.

Not only did Gerlach admit that the milk of phthisical cows is hurtful, and specifically hurtful, because it transmits the tuberculization, but he also studied the seat and the ways of infection : the mesenteric glands were constantly diseased and filled with caseous and calcareous deposits ; it was by this way, by the digestive surface, that the virulent principle had penetrated and had progressively contaminated all the organism. "It remains to be discovered," he says, "if tuberculization of the lungs is only a secondary infection, resulting from the resorption of the caseous points formed in the mesenteric glands ; just as in the rabbit and guinea-pig Tuberculosis is merely the generalization of the infection at first localized in the caseous centre at the point of inoculation ; or rather if, on the contrary, the blood of the entire organism is not infected at once."

We shall not follow Gerlach in this interesting discussion, and it would be premature to insist on the prophylactic measures he recommends ; we shall only give a summary of the conclusions with which he terminates his memoir :—

"The extirpation of Consumption in cattle should be energetically carried out. In a herd the disease is propagated by the milk an infected cow gives to its progeny, so that it is rare that in a pasture cases of the disease are isolated. There are herds which are ravaged by it, while alongside of them are others which are perfectly free from it. All suspected animals should, therefore, not be allowed to breed ; and cows ought not to supply milk to children until their condition as to health is clearly ascertained. As the diagnosis of the malady is difficult, it is necessary, at the outset, to be assured that the cow does not come from a tuberculous herd, or a doubtful source."

According to the researches hitherto made, goats do not appear to be susceptible of contracting the disease ; and because of this, these creatures would be excellent for supplying children with milk.* In doubtful cases the milk should always be boiled.

Gerlach's memoir is dated 1869, and its importance justifies the long extract we have given ; we are astonished that such a work has scarcely been noticed in France. It is true that in 1873, when Gerlach was called to

* We shall see presently that Bollinger has made some of these experiments on goats, and with successful results.

Berlin as Director of the Veterinary School, he repeated his experiments, but could not succeed in reproducing Tuberculosis by infected milk, though he afterwards discovered at the autopsy that the cow which had furnished the experimental milk was not tuberculous. This, therefore, was not a negative, but a null experiment, and affords a peremptory illustration of the difficulties surrounding the diagnosis of the malady, even in the hands of the most eminent and trustworthy practitioners.

The autopsy of the animal which has furnished the suspected milk, is, consequently, absolutely necessary in order to give experiments of a serious value.

A long time was not allowed to elapse before Gerlach's researches were examined and tested. In 1873, Klebs, Professor of Pathological Anatomy at Prague, in the first volume of his *Archiv*,* published a long memoir, in which experiments on the transmission of Tuberculosis by milk occupied the largest space. The milk he employed was furnished by a cow which was certainly phthisical, and which had been placed at his disposal by Professor Leonhard, of Berne. He experimented on nine vigorous and well-developed guinea-pigs, derived from a very healthy family, a large number of which had served for experiments of various kinds, and none had offered traces of tubercles. The memoir is divided into four parts, in which the author studies successively the following four questions :—1. Can the milk of phthisical cows transmit tubercle? 2. Is it the fluid portion of the milk which serves as a vehicle for the infectious element? 3. Does cooking destroy the noxious properties of the milk? 4. Is the milk of tuberculous cows noxious in all phases of the malady?

The five animals employed to solve the first question were healthy and strong; they drank the suspected milk *ad libitum*. Two died on the twelfth and twentieth day of the experiment. In one, the gastro-intestinal mucous membrane had a bright red tint, the mesenteric glands were abnormally tumefied, and there were caseous nodules in the spleen and liver; in the other, which was greatly emaciated, there were numerous nodules in the liver; the other organs were healthy. The other three guinea-pigs, which had wasted, and their coats looked unhealthy, were killed on the fortieth day. In one, all the organs were found normal; in the second there were caseous nodules in the liver and grey nodules in the mesenteric glands; while in the third there were cicatrices on the surface of the liver and caseous deposits in the spleen.

From these experiments Klebs draws the following conclusions :—1. Animals rapidly become unwell after the ingestion of tuberculous milk, but they may afterwards recover. 2. When death is rapid, it usually occurs as the consequence of a gastro-intestinal catarrh. 3. The alterations are first developed in the mesenteric glands, in the gland of the vena porta, and then in the liver and spleen. 4. The alterations in the liver consist of multiple tuberculous centres disseminated in the whole of its substance, or proceeding from a central deposit. Reparation appears to be made by cicatrix, and we consequently find cicatrices corresponding to the old deposits, and caseous masses corresponding to the recent centres. In the spleen the caseous nuclei persist longer than in the liver.

Klebs did not find, after the ingestion of this milk, the intestinal ulcers which had been observed in animals fed with tuberculous matter; the latter had not such a marked intestinal catarrh.

We cannot cite these experiments without criticising them. Klebs does not sufficiently describe the lesions observed at the autopsies, and he too

* *E. Klebs.* Die Künstliche Erzeugung der Tuberculose. Archiv für Experimentelle Pathologie und Darmakologie. Vol. i., p. 163.

† *Loco citato*, p. 613.

readily accepts the notion that he really has to do with tubercle. He does not sufficiently prove that the cicatrices found on the surface of the liver of a rabbit result from the resorption of caseous centres; it would require more numerous and more rigorous experiments to establish so serious and extraordinary a fact as the resorption and cicatrization of tubercle, and we may ask if these were really tubercles?

Klebs filtered the coagulated milk through clay; he mixed the limpid serum with starch, and injected this clear fluid into the abdomen of three guinea-pigs. These animals died or were killed on the fiftieth day, and yellow or grey miliary granules were found in the liver, spleen, and lungs. Klebs, therefore, concludes that it is the serum which serves as the vehicle for the infective agent; but we may accuse him of having determined a traumatism which appears to him to be alone capable, in some cases at least, of causing analogous lesions in small rodents—such as the rabbit and guinea-pig.

Lastly, he gave a guinea-pig milk of the same kind, but which was previously boiled. The creature presented the same lesions as were observed after the ingestion of uncooked milk. This result surpassed all expectation, and it is somewhat calculated to give rise to doubts as to the value of the preceding experiments. Klebs appeared to be embarrassed at his success, for he says that perhaps the milk was not well boiled, though the operation was done every day by Dr. T., his assistant.

The last portion of the memoir contains a very curious and important observation, which merits reproduction somewhat in detail. A dog belonging to the director of a *Maison de Santé* in the neighbourhood of Berne, was particularly well cared for, and every day drank a large quantity of milk in the dairy of the establishment. This milk was obtained from a cow which was afterwards killed, and found to be tuberculous in a high degree. After partaking of this milk for a somewhat long period, the dog lost its appetite, became ill, and at the desire of the son of the director, who was one of Klebs' students, it was placed under observation at the Berne Veterinary Institute, where it died. It was a large-sized dog, of the St. Bernard breed. At the autopsy there was discovered pleural and pericardial effusion, an innumerable quantity of grey miliary tubercles beneath the pleura and the pericardium, some caseous nodules in the spleen and liver, and indications of acute intestinal catarrh; at the termination of the ileum there were some ulcers, the borders of which were studded with tubercular granules. There were also grey and caseous deposits in the mesenteric glands.

In order to assure himself that the dog had really contracted this Tuberculosis by partaking of the milk of the phthisical cow, Klebs had a very young goat fed with this milk. At the end of two months, the goat was killed, and only an insignificant number of doubtful deposits was found. Klebs could not explain this difference in the results; so he instituted an inquiry, and learned that through a misunderstanding they had sent him the milk of another cow, which had been coughing a little and lost condition, but was recovering and commencing to give an abundance of milk. The cow whose milk had infected the dog had been killed before the commencement of the last experiment.

The fact appears surrounded with serious guarantees, and it is, doubtless, a unique example of Tuberculosis transmitted to the dog through the digestive canal, and especially of transmission by the milk.

We have analysed, with some detail, the memoir by Klebs, inasmuch as the extracts which have been given in the majority of journals or books consist only of the conclusions arrived at by the author. An attentive perusal of the observations shows that he attributed to them an, at times, exaggerated value and significance, and, without denying their importance we

see that they are open to numerous criticisms. Klebs' conclusions have been the occasion of an excellent review by Dr. Ranse*, in which we find, together with the most judicious reserves, the expression of doubts which appear to us to be justified until more complete researches have shown their groundlessness.

Bollinger,† professor at the Zurich Veterinary School, in a kind of Conference held at the Medical Society of that canton, on May 26, 1873, passes in review the modern researches into the transmission of Tuberculosis. In chapter iii. he gives the result of personal experiments made on animals which he had caused to ingest tuberculous matter, and in the majority of instances he had obtained a positive result. With regard to the action of milk from tuberculous animals, he does not adduce any personal experiment, but contents himself with citing and summing up those of others in the following terms :—

3 pigs : 1 success, 2 cases doubtful.
3 calves : 2 successes, 1 premature accidental death.
1 lamb : 1 success.
2 dogs : 2 non-successes.
2 cats : 2 non-successes.
14 rabbits : 2 successes, 6 non-successes ; the other 6 rabbits were fed on the milk boiled, and were consequently unaffected.

He expresses the opinion that the "Tuberculosis and Scrofula of pigs are assuredly mainly due to the fact that these creatures consume the milk and remains of phthisical cows in the abattoirs" (note, p. 373) ; but he gives no proof in support of this too confident assertion.

In 1875, in a new memoir,‡ which contains no more personal experiments, Bollinger reviews and criticises the attempts at transmission with the milk of phthisical animals up to that date ; and he maintains his former opinion, though making reserves which no one could mistake the necessity for.

Fleming, the director of the Veterinary Service in England,§ has for a long time given the sanction of his authority to the experimental researches of Gerlach, Klebs and Bollinger. He does not appear to have made experiments himself, but in his first memoir‖ he relates what had been already done in this direction, and the results appear to him sufficiently conclusive to warrant him expressing himself in the following terms : "The commencement of Phthisis is so insidious in the human species, that it is difficult to say when and how it begins. Is it not to be feared that one of its causes is to be found in the use as food of the flesh, and more especially of the milk, of phthisical cows? It is particularly in the dairies of towns and cities that this Phthisis is common, and the mammary gland of cows is not unfrequently invaded . . . . With much more reason still should we prohibit the milk of cows affected with Tuberculosis, especially for the use of children, who chiefly live on milk,

* *Ranse.* Gazette Médicale de Paris, 1873.

† *Bollinger.* Ueber Impf- und Futterungstuberkulose. Archiv für Experimentäl Pathologie and Pharmakologie, 1873, p. 356.

‡ *Bollinger.* Gegen die grosse Gefährlichkeit des Genusses von Fleisch und Milch tuberkuloser Thiere. Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie, 1875.

§ [There is no Veterinary Service in England, and Mr. Fleming is, as a correspondent in the VETERINARY JOURNAL recently and correctly stated, "merely a regimental veterinary surgeon." We hope our foreign colleagues will note this fact, as Mr. Fleming is often alluded to by them as holding official positions other than that belonging to him in the army.—ED. *V. J.*]

‖ *G. Fleming.* The Transmissibility of Tuberculosis. The British and Foreign Medico-Chirurgical Review. October, 1874, p. 461.

and in whom the power of absorption is very active. It has been known for a long time that this milk, otherwise very poor, is capable of producing diarrhœa and debility in children; and although many of these young creatures nourished on such milk may perish from general or localized Tuberculosis, the part that fluid plays in the development of the malady may scarcely if at all be suspected."

In his *Traité de Medicine Vétérinaire et de Police Sanitaire*,* Fleming expresses himself in the same manner, and declares that the sale of this milk should not be allowed when the disease is found to exist in cows, and especially if it is in an advanced stage.

At the Hygienic Congress held in June and July, 1876, at Düsseldorf,† the fourth question of the programme was as to "the utility and regulations for the control of milk in towns." Dr. Heuzner, of Barmen, to whom was confided the task of reporting on the matter, terminates his labours in these words:—"We know that a grave suspicion exists with regard to Tuberculosis being capable of transmission to mankind, through the medium of the milk. But the interdiction of the sale of this milk is not possible, and could not receive practical sanction; inasmuch as this affection is extremely frequent, and its diagnosis at the commencement is scarcely possible, even by veterinary surgeons. I shall not dwell at length on the measures to be proposed in connection with it; a higher authority than myself (Bollinger) gives detailed information on this point. I will, therefore, content myself with remarking that, as a general rule, it is advisable to boil cow's milk, and especially that intended for the nursery," etc.

The eleventh "thesis" or proposition submitted to the Congress on this question was thus formulated: "Uncooked milk, which may be the vehicle of morbid germs, and especially of Tuberculosis, should always be boiled before being offered for human consumption.

This proposition was voted without discussion, and merely elicited the following affirmation from Bollinger, then professor at the Zurich Veterinary School: "The alimentary employment of milk warm from the cow is so common, that a person would scarcely be believed if he expressed any doubt as to its utility; and, in fact, when it is obtained from healthy animals there is no danger. But sick cows—those which have tubercules or caseous inflammation of the lungs—continue to yield milk; and this milk, when uncooked, is very dangerous. Only a short time ago, I knew of a goat, the freshly-drawn milk of which was drunk by invalids and by children, who died soon after. At the autopsy of this goat I found it tuberculous in the highest degree."

Finally, the same question was raised at the last Congress at Brussels; and Virchow, of Berlin, represented, we may admit, the scientific opinion of Germany, when he said:

"Up to what point may the contagion of Tuberculosis be due to the milk of cows affected with Phthisis (*Perlsucht*)? A series of experiments made by the director of our Veterinary School—Gerlach—seems to authorize the conclusion that the use of this milk is most injurious, and may even give rise to tuberculous diseases of the intestines, mesenteric glands, and other parts of the body. At this moment, the Minister of Agriculture has ordered a more extensive series of experiments, and these are being carried out simultaneously at the Veterinary Schools and Prussian Universities. A large number of researches have been already made, but without yielding any definitive result

† *G. Fleming.* A Manual of Veterinary Sanitary Science and Police. London, 1875. Vol. ii., p. 395.

* Die vierte Versammlung der Deutschen Vereins für offentl. Gesundheitspflege zu Düsseldorf in 1876. Deutsche Vierteljahresschrift für off. Gesundspflege, 1877.

up to the present time. Nevertheless, we may always look upon it as a fact, that a great number of animals fed in this way have been attacked with tuberculous affections. It is from this point of view that I strongly urge your attention to a question of capital importance with regard to the alimentation of man, and principally of infants."

Virchow here makes allusion to the discussions which occurred at the meeting of the Superior Veterinary Council of the German Empire, which took place in April, 1875. Several of the members—Albrecht, Lustig, Verner, &c.,—submitted to the Council, with regard to the noxiousness of tuberculous flesh and milk, propositions which elicited very divided opinions. After a stormy discussion, the members could only agree on one point, and that was with regard to the necessity for instituting a permanent Commission charged to study, by means of new experiments, this important point in public hygiene.

We need here only allude in passing, and chiefly in reference to the bibliography of the subject, to a paper read by Dr. A. N. Bell, of New York, at the Congress of Medicine and Public Hygiene, held at Chicago on June 6, 1877.*

The author gives a *résumé* of our knowledge of the subject up to the time he wrote, but he had not made any experiments. He, however, furnishes most interesting details with regard to the deplorable condition of the dairies in and around New York, and the frequency of Phthisis in them. Of eleven cows which died in these dairies, and at the autopsies of which he assisted, he found very advanced lesions of pulmonary tuberculization in ten of them. The milk obtained from these cows was sold in large tin cans, on which was painted in large letters, *Pure Milk!*

(To be continued.)

Proceedings of Veterinary Medical Societies, etc.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Thursday evening, January 16th, 1879; Tedbar Hopkin, Esq., President, in the chair. The following gentlemen were present:—Dr. A. Gamgee Owen's College, Manchester; Professor Pritchard, London Veterinary College; Messrs. P. Taylor, Tom Taylor, John Lawson, M. A. Taylor, M. J. Roberts, E. Faulkner, Bernard Wood, J. B. Wolstenholme, A. Banks, and E. Houldsworth, of Manchester; Mr. Talbot, of London; Messrs. Polding and Bridge, of Bury; W. Dacre, W. P. Greenhalgh, and Dr. Renshaw, of Altrincham; J. B. Taylor, Ashton; E. Woolner, Todmorden; B. Marshall, Knutsford; Mr. Ferguson, of Warrington; A. Darwell, Northwich; Mr. Thomas Oldham; Messrs. Hutcheon, W. Leathes, J. Wilsby, M. Moore, G. Morgan, W. W. Townson, of Liverpool; W. Whittle, Worsley, and Sam. Locke, the Secretary. Letters of excuse were received from Professor McCall, W. A. Cartwright, T. Proctor, W. G. Schofield, M. E. Naylor, G. H. Darwell, R. Reynolds, J. Darwell, Jas. Howell, A. Lawson, Thomas Greaves, and W. Woods.

The minutes of the last meeting were read and confirmed, after which the Secretary, in the absence of Mr. Tom Taylor, nominated two gentlemen as members of this Association, viz., Finlay Dun, Esq., 2, Portland Place, London, and T. A. Dollar, Esq., 56, New Bond Street, Oxford Street, London.

* *A. N. Bell, M.D.* Tuberculosis in Milch Cows and the Contagiousness of Tuberculosis by the Digestive Organs. The *Sanitarian*, a Monthly Magazine, August, 1877.

The PRESIDENT said: I cannot allow this meeting to pass without mentioning to you that we have lost one of our members by death—Mr. Alfred Challinor has now passed away. You will all remember his kindly, genial character, his agreeable manner, and how much pleasure it gave every one who knew him to have him with us. He has gone, and we shall never see him again; and we shall only be doing our duty if a letter of condolence be sent to his widow; we have not only lost a friend, but a valuable member of the profession. Seconded by Mr. Whittle, of Worsley.

Mr. WHITTLE proposed that all liabilities of the Association be paid, and if the treasurer had not sufficient moneys in hand he was to draw from the bank account. Seconded by Mr. P. Taylor.

The PRESIDENT then introduced Dr. A. Gamgee, of Owen's College, Manchester, who had kindly promised to read a paper "On the Application of the Graphic Method to Physiological and Pathological Investigations."

He said: Mr. President and gentlemen,—You will allow me in the first place to say, that it is with much pleasure that I came here this evening—I feel very great interest in the veterinary profession; in the second place, if I had another inducement to come here with pleasure, it was the feeling that I had been asked to come by Messrs. T. Taylor and Locke, from whom I have received many acts of kindness. I trust members will excuse me if I have come to some extent unprepared with an elaborate lecture: my time is very much taken up with my duties in Owen's College, and I am very much engaged in literary work. It seemed to me, however, that the members of this Association might be interested if I merely came before them, and drew their attention to some experiments by the aid of the Graphic method. He then spoke of the important and rapid advancement which physiology had made during the present century, and he endeavoured to trace the causes of it. It could not be due to the superior acuteness and energy of modern investigation, nor altogether to the greater number of them at present devoted to the work of research. For if we looked back to the history of the 17th century, we found earnest physiologists of the highest ability who would compare very favourably with the physiologists of the present day. What recent physiologists could fairly claim was the merit of having imparted to physiological research a precision by the introduction of the Graphic method of physical investigation. Professor Gamgee proceeded to illustrate the Graphic method by experiments with the muscle and nerve of a recently killed frog. A frog's muscle was so prepared that when an electric shock was sent through its nerve, the muscle contracted and lifted a lever, the point of which made a mark upon a sheet of paper. The curve drawn by the lever-point was a permanent record of the act of contraction, and a study of it brought to light very important facts. Thus the muscle did not enter into contraction the very instant of the application of the electrical stimulus, but a brief interval elapsed, called the "latent period," between stimulation and contraction.

He further illustrated the Graphic method as applied to those parts of physiology more closely connected with medical practice, viz., to the physiology of the circulation. He described the method of accurately estimating and recording the blood pressure, which was devised by Hales, Poissenille and Ludwig, and exhibited the Kymographim of Ludwig. He also exhibited the Sphygmograph, for recording the movements of the pulse in man, and explained the nature of the curves which are obtained by means of it. He described the Cardiograph, for recording the movements of the heart against the chest-wall, and took a tracing by applying the instrument to the chest-wall of a small dog. In order to explain the meaning of the tracing, Professor Gamgee described the experiments of Marey and Chauveau with the horse's heart, in which flexible india-rubber bags were passed down

the veins and arteries into the auricle and ventricle of the heart. Each bag was provided with a tube connected with a drum supporting a lever. When the auricle or ventricle contracted, the bag in its interior was squeezed and the air in the drum connected with it was expressed. Thus the lever was raised, and by an appliance like that described in the experiment with the frog's muscle, was made to write upon a paper surface.

The PROFESSOR explained at great length these experiments, to the edification and pleasure of all present. A cordial vote of thanks was accorded him, and he very kindly promised at some future date to read another paper.

Mr. W. A. TAYLOR then proposed Mr. W. Dacre as President for the ensuing year; seconded by Mr. John Lawson, and carried unanimously.

Mr. DACRE said: In accepting the office of President of this Association, I do so with very great pleasure. For some years I have taken the deepest interest in it, and I have endeavoured to make the society one of use to us. I have always tried, with the Secretary, to get papers read which were practical, and upon which we could have a discussion which would be of lasting benefit to us. I just rise with these few words to thank you most sincerely, and I give you my word that the honour and success of this society shall not fail in my hands, if I have your support in my term of office.

Mr. PETER TAYLOR proposed for re-election, Mr. Sam. Locke, as Secretary; seconded by Mr. T. Hopkin, and carried. Mr. Peter Taylor proposed for re-election, Mr. A. Lawson, as Treasurer; seconded by Mr. W. Whittle, and carried. Mr. M. J. Roberts proposed Mr. T. Hopkin, Mr. John Lawson, and Mr. W. A. Taylor as Vice-presidents; seconded by Mr. Locke, and carried. A vote of thanks to the President closed the proceedings.

SAM. LOCKE, *Hon. Sec.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

(*Continuation of Mr. Gerrard's paper on Parturient Apoplexy. See page 123 of last month's Journal.*)

I shall now direct your attention to the Ganglionic theory of the disease—a theory which, Mr. Fleming says, is "the most far-fetched of any." And in proof of his statement, he asserts that "the nerve of the intestines is a vessel nerve, and if it were to be paralysed, the vessels of the intestines would be paralysed also, which would clearly appear on dissection."

But, indeed, this is just what occurs—although not to such an extent as to be seen in every case on dissection, but in a similar proportion to the other parts paralysed.

And not only are the vessels affected in their smaller branches, but the intestinal muscles also, which are principally under the control of this system. If they are not so, why this distressing tympanitis and antiperistalsis of the œsophagus, which often converts a hopeful case into a fatal one? "None of the symptoms of this disease," he says, "favour the belief that the sympathetic system is affected."

I most thoroughly believe that all the symptoms of this affection point most conclusively to the primary disturbance occurring in this system of nerves. Not only does this system preside over and control the vascular supply of the intestines, but it is the vessel nerve of the whole body. It governs all those motions which are purely involuntary, and its centres are believed to be the seats of those faculties we call "emotional" and "instinctive;" from it the heart receives its motor impulses—the vagus being a moderating nerve of that organ.

Branches of nerves from the ganglionic centres accompany every artery

throughout the body to its termination, and without the direction of the will regulate the contraction and dilatation of the blood-vessels to their most refined distribution. If this supply be cut off by division or impairment of function of the ganglionic nerve of a part, the vessels are paralysed, and become dilated with the flowing blood.

When certain physical impressions are made upon the organic nerves, the disturbance of their supply is indicated by distant phenomena; the blush which mantles and the pallor which overspreads the check under the influence of mental emotion or shock, are phenomena of this order. The effect of mental emotion on digestion and biliary and lacteal secretion are well known. And, as the late Professor Barlow says, "Why should not the powerful excitement of parturition, in some similar way, affect the cow, producing, among the other derangements, arrestment of lacteal secretion—an event by whatsoever means effected, directly or indirectly—eminently mischievous?"

The functional importance of this system of nerves is proved by the fact, that in the very lowest class of animals, where preservation and propagation of their own species is their sole function, it is the only system existing, and it is only as we rise in the scale that this primitive nervous chain becomes connected with the fibres of the more highly developed nervous system. But even in the highest development—man—the primitive chain remains; and although connected by their fibres in different parts, they are still distinct, both anatomicallyand functionally.

A system so universal and so important to all the functions of organic life cannot but be implicated in such a disease as this, when we reflect that the complex fluid called "milk," at once the most typical and most universal food elaborated from the storehouse of nature: and, further, when we reflect that in order to produce this fluid a large development of this system is necessary; and it has been proved that during pregnancy, not nerves only, but considerable ganglia, previously not perceived to exist, are apparent in the vicinity of the uterus and mammary glands.

If, therefore, the sympathetic system be interfered with, as it undoubtedly is, other vessels than those of the intestines would be paralysed, and other and very important functions would be suspended or interfered with. And, indeed, this is just what we find in this disease—the interference with or suspension of nearly all the important functions of the body, especially secretion, excretion, volition and motion.

It is evident that if all these functions are interfered with, the function of some part of the nervous system is either wholly or partially suspended—in short, we have what is known as paralysis.

But, indeed, Mr. Fleming admits "that in the course of the disease there is paralysis of the vagus;" but the vagus is not of the sympathetic, and the question arises, how does this paralysis occur?

This, I think, is the principal difference between us; but it is a difference that lies at the root of the matter.

Is the paralysis centric—arising from the brain lesions of anæmia or extravasation? or is it reflex—arising from some "peripheric excitation"?

I have already indicated my opinion against its being centric or commencing in the brain from the sudden rush of blood thereto, either by anæmia or extravasation. I shall now briefly indicate my reasons for thinking that it is eccentric, or originating in the ganglionic system.

The first proof that it is of an eccentric nature is the fact that the paralysis is of a progressive type.

We never find any cases of this disease corresponding to an apoplectic seizure of the human being. No; the first stage of this disease is that of excitement—the bloodshot eye, the excited look, the throbbing heart, and the heightened temperature occurring at or soon after the act of parturition

give evidence of dilatation of blood-vessels following upon the reduction of nervous control. Now, what causes this dilatation of blood-vessels? Deficiency of nervous influence, induced by the excitement of the act of parturition, and the recoil of the ganglionic system from its attempts to rid the system of its superabundant nitrogenous elements in the shape of milk. As a rule, you will find, at least I have always found, that the secretion of milk is very abundant at first, or in the first stage of vascular excitement. What more common to be shown or told of the great bucketful of "beastings" they got from a cow as soon as she was calved; and of the great surprise they experienced when some six or more hours after they could not get a drop?

But by this time the eye begins to grow dim, the heart to flag, the temperature to fall, the cow commences to lift her hind-legs spasmodically, and perhaps staggers when made to move, showing that the function of the spinal cord is interfered with. By-and-by, the co-ordination of muscular movement is seriously impaired, and she staggers and falls, perhaps to rise no more, but not always.

This stage occurs in about from twelve to twenty hours, if the cow is of an excitable temperament, and a very heavy milker in high condition. When newly fallen, if we prick with a pin or pen-knife in the posterior extremities, you will find sensation gone; but as you advance up the spine you will be able to make her feel, and perhaps start up, but only to tumble down again. Now the breathing begins to be excited and short, depending a good deal on the condition of the stomach, the eyes become duller, the temperature of the body low, and sometimes great uneasiness is manifested, and attempts to rise are frequent and ineffectual.

Now in all this we have only a gradual and progressive interference with function; apoplexy, in the ordinary sense of the term, as yet we have not. Gradually, however, the outworks are sapped and surrendered, and at last perhaps the citadel is reached and fearful havoc made in the garrison, as indicated by the pendulous head persistently turned to one side or unconsciously dashed about, the amaurotic eye suffused with tears which frequently run down the cheeks, stertorous breathing, general insensibility to all stimuli, and the complete loss of all voluntary muscular power.

In short, the carcase lies a mere log—dead in all the organs except the one having its motor supply from the nervous system of organic life, "the heart;" this is always the last to yield.

This is apoplexy, as I have observed it; and it is no fancy picture or fictitious case I have sketched. Such cases are of almost weekly occurrence with me, and at all seasons; for I do not believe that temperature has anything at all to do in its production. Indeed, I have as many in the months of December and January as in June or July.

All cases, however, do not go on to apoplexy; but the apoplectic stage is generally reached before we are called in, and indeed before they are observed to be ailing; unless the owner may have had frequent losses, causing him thereby to watch them closer.

But in all cases that I have watched from the commencement, this has been the course of the disease, which convinces me that we have no sudden case of collapse commencing at the brain, induced by aortic pressure or anatomical formation, either anæmic or congestive, but that it is of a progressive type, commencing at the periphery, and gradually reaching the centre.

We have seen that all the minute blood-vessels at the extremities of the circulation are under the control of the ganglionic system of nerves. We have seen, also, that they are the principal nerves presiding over nutrition and secretion, notably so the secretion of milk. Now it is a well-known law in the animal economy, that whenever there is a great excitement in the

system, it is succeeded by a corresponding depression. Upon this fact in physiology hangs, I think, the explanation of this theory of the disease.

The first stage of the malady is characterised by excitement of the udder. There is a determination of blood to it by what is known as sympathetic action. However we may theorize and speculate on aortic pressure, undoubtedly the great volume of blood finds its way to the udder, even before the act of parturition commences, and always before that act is concluded. Now this is most noticeable in heavy milkers, and it is in them only that we have the disease, and where the ganglionic system is largely developed.

The excitement of the parturient act is followed by a copious secretion of milk; but in consequence of this very copiousness of secretion, and the peculiar susceptibility of the ganglionic system to take on morbid impressions, there is a reaction or recoil in it, and the function of the ganglia are suspended.

The effect of this disturbance of ganglionic function is to cause dilatation of the peripheral vessels, especially the vessels of the udder. The blood now rushes into the uncontrolled vessels, giving rise to the stage of engorgement. With this disturbance of power in the vessels of the udder, more disturbance is set up in the other organs through reflex action; excitement of the whole system is visible, and soon the diminished action of the spinal cord is apparent in the deficient power of co-ordination of muscular movement in the posterior extremities, and by the influence the cord is known to exert upon the heart through the sympathetic system.

The peculiar action of the cord in increasing the force and number of the pulsations of the heart, is through what is known as the *nerve of Cyon*, by means of which the heart produces a reflex action, which causes the organs of the peripheral circulation to dilate, and consequently enables it to diminish the number and energy of its efforts. And this, we find, is what occurs at this stage of the disease.

This, I believe, is the explanation of the brain symptoms: effusion arising from the paralysing reflex action of the *nerve of Cyon*, the depressing nerve of the circulation, producing depletion of the heart, and consequently diminution in the pressure of the blood in general, evidenced by the lowered temperature which now is present, and feeble beat of the central organ of the circulation, with coma, and most frequently death when this stage is reached.

In short, we have, first, excitement of the gland through the sympathetic action, ending in increased secretion of milk—1st stage. This is almost suddenly succeeded by engorgement of the gland, through a reflex action of the ganglionic system, allowing of the dilatation of the blood-vessels, assisted by the increased amount of blood thrown back upon the system by the rapidly involving uterus, and consequently an arrest of secretion—2nd stage. The functions of the cord are interfered with through the reflex action of the hypogastric or lumbar plexus, hence the loss of co-ordination of muscular action in the posterior extremities—3rd stage. This is succeeded by the peculiar action of the *nerve of Cyon* upon the peripheral circulation, excited through the heart; effusion into or on the soft brain tissue occurs—4th stage. This may be succeeded by permanent loss of brain power and collapse, or resolution if the excitement has not been too strong, or the effusion too extensive.

Such, in brief, are my conclusions as to the nature and cause of this disease. They are founded on practical observation, and sanctioned by the known laws of physiology and pathology. Instead of being "far fetched," as Mr. Fleming maintains this ganglionic theory to be, it is the only one that, in my humble opinion, most directly and simply meets the requirements and accounts for the phenomena of this complicated condition of the bovine female

In these days of germs and bacteria, we are too apt to look beyond the system for some particular entity as the cause of disease that was created and been living on in the by-past eternity, and that will continue to live on in the eternity to come; and to forget that, after all, what we call disease is a natural, although an abnormal, condition of the body; that, in fact, pathology is a department of physiology, and the phenomena of disease result from the action of normal structures and forces of the body, only modified by morbid conditions.

In conclusion, gentlemen, I have to thank you for your kind and unwearied attention, for wearied some of you, no doubt, must have been listening to this dry, and it may be to some of you, somewhat unpalatable harangue. If I have wearied your patience, I crave your indulgence, and hope you will have your remedy in the host of objections you will be able to raise to some of the ideas advanced, and the criticisms submitted. So that a good and profitable discussion may be evolved, truth may be attained, science advanced, and you and I may find our reward in the consciousness of having done, or tried to do, our duty.

Mr. P. TAYLOR complimented Mr. Gerrard on the ability he had displayed in the production of such an excellent paper. The subject was a very interesting and important one to every veterinary surgeon, and their thanks were due to him for the very scientific and practical manner in which he had treated it. The paper was one which it would have been an honour to any professor to have brought before them. He concurred, generally, with the views propounded by the essayist, and hoped that they would have an opportunity of reading them in the journals, where by a careful study of the theories he had advanced, they would be able to derive more benefit than it was possible to do by merely hearing it read once.

He then gave a brief summary of the symptoms of the disease, and the general course of treatment pursued by himself. He had seen much of it, and he had treated it in every manner and way; but he could not say that he had been much more successful with any one mode of treatment than with another.

In the first stage, he gave purgatives, combined with stimulants and nerve tonics. He never gave any medicine in the comatose state, as he considered it dangerous to do so. He applied, externally, stimulants, hot cloths, and the smoothing-iron to the loins and abdomen, kept the cow on her sternum, fixed her horns to the stall, drew off the milk frequently, and emptied the bladder and rectum at short intervals. But when you have done your best, he said, you will often be disgusted with your want of success in treating this disease. Treatment, to be successful and satisfactory, must be preventive. He was in hopes that the essayist might have discovered a cure for it.

Mr. STORRAR said that his own opinion of the pathology of this disease was thoroughly at one with the theory enunciated by the essayist, and agreed with Mr. Taylor that our principal aim, where this disease was prevalent, should be directed towards its prevention. In his own practice he gave stimulants and purgatives; of the former, he preferred ammonia to alcohol, as he considered that the sedative reaction of alcohol was detrimental in this disease. He generally gave his purgative medicine in a solid form in this disease—first, because it was safer to administer; and, second, because it went directly into the rumen, where it was most wanted.

Mr. MOORE, SEN., said that he had not given purgative medicine either as a preventive or cure in this disease for 20 years. The bowels are only paralysed, and if you restore the nervous system, the muscles will soon act. His practice was to give aconitum and belladonna alternately, in the first or excited stage. If tympanitic, he gave ammonium causticum, and in the

comatose stage, he gave arsenicum ; and when the animal began to recover, he administered nux-vomica.

He had tried galvanism, and found that by applying it across the loins he could disperse the gas in the stomach ; but he had experienced difficulty in applying it effectually in this disease.

Mr. STEVENSON said he had also tried galvanism in the treatment of this disease, but had failed to do so effectively, or with even any results in the comatose stage.

Mr. BARNES said that he agreed with the essayist as to the pathology of the disease. He had seen a great many cases of it, and had been fairly successful in the treatment of it, his recoveries being about 50 per cent. His practice was to bleed in the first stage, administer stimulants, combined with slight aperients, and apply stimulating applications to the spine, and a severe blister to the pole. He attended to the animal generally, as spoken to by the previous speakers. He had, however, often experienced great difficulty in getting the cow up after the disease had subsided, and related some cases where the muscles of the hind-quarters were almost a mass of degenerated tissue.

Mr. ELAM thanked the essayist for the time and trouble he had bestowed upon his paper, and hoped that he would agree to allow it to be published in the journals. In his own practice, for this disease he had formerly tried purgatives ; but he now mainly depended on the administration of stimulants, principally ammon. carb. The bowels, he thought, acted better by the administration of this medicine than by any other he had tried. He attended to the animal generally, as referred to by the other speakers, only he applied ice or cold cloths to the pole. He had also experienced the same trouble of getting them up after the acute stage was passed, as Mr. Barnes had referred to. As a preventive, he kept them short of food, and gave them ammon. carb. both before and after calving.

Mr. WOODS said that from his own observation and experience of this disease, he was inclined to think that there were some local causes, such as climate, &c., which had considerable influence in producing the disease, as there were some districts in which it was very prevalent, and others quite contiguous where it was scarcely seen. He had for a number of years devoted his attention principally to its prevention, and, he believed, with good results. He recommended ammon. carb. to be given both before and immediately after parturition.

Mr. WELSBY concurred in general with the views of the essayist, but he could hardly reconcile the practice of administering ammonia previous to parturition as a preventive recommended by the previous speakers, with the opinion that the disease never follows difficult cases of parturition. He preferred keeping them on low diet, moderate exercise, and the administration of mild aperients. If the cow has a morbid appetite, bed her with sawdust, or put a muzzle on.

Mr. MORGAN said he had not seen very much of this disease, but he agreed generally with the view taken by the essayist, and considered that improved breeding and artificial rearing were the principal causes of this disease, as among animals in the wild state it did not occur. They were much indebted to Mr. Gerrard for his excellent paper, and hoped that he would accede to the request of the members, and allow it to be printed.

Mr. DACRE, like the other members, expressed the pleasure with which he had listened to Mr. Gerrard's paper. He then criticised Mr. Moore's treatment, and said that he had come to the conclusion, from his own experience, that the less medicine you administer in this disease the better. He then related a very aggravated case, in which he administered no medicine, attended carefully to the animal, turned her over, relieved the tympany, applied hot cloths, &c., and the animal recovered very satisfactorily.

Mr. REYNOLDS spoke in terms of appreciation of the paper, and agreed in the main with the opinions propounded in it. He would like to have the essayist's opinion as to whether allowing the calf to suck was beneficial or otherwise, as its presence with some, and absence with others, caused great excitement in the cow.

Mr. TOWNSON, after complimenting the essayist on the production of such an excellent paper, said that in his own practice he bled in the first stage; but if the cow was down, he did not bleed, but administered a mild purgative, combined with stimulants, such as brandy, whisky, or the salts of ammonia, and attended to the animal otherwise, as referred to by other speakers.

Mr. WATSON and the SECRETARY also complimented the essayist on the ability he had displayed in bringing before them such a clear, philosophic, and scientific paper on such an important subject, and concurred with the wish expressed by the other members that he would allow it to be published, in order that they might have a better opportunity of examining it.

The PRESIDENT referred to the breeds of cattle most liable to it; the pure breeds, with the exception of those principally bred for dairy purposes, being most exempt. In reference to the age at which the cow was most liable to it, his own experience was that it occurred about the fourth or fifth calf, while some other members considered that the third calf was the most likely time. He concluded by thanking Mr. Gerrard for his very able paper, and asked him in his reply to favour them with his opinions as to the treatment, as that had occupied a prominent part of the discussion.

Mr. GERRARD said, that although he had spoken to them at great length, he had said nothing as to the treatment of the disease. This they would readily understand, as the therapeutics of the subject did not fall within the scope of his paper. But as some of the members appeared to be anxious to know his experience on that point, he could not do better, perhaps, than indicate his procedure in a case.

In the first stage of the disease, or before the cow is down, he said, I administer a stimulant—brandy, half a pint, ammon. carb. 2 oz.; water half a pint, repeated every hour or even oftener, according to the nature of the case—I find the best. Rub a strong ammoniacal liniment along the spine and across the loins, cover with a rug, blanket, or sheepskin—if procurable. A good smart purgative administered at this stage does more good than when the animal is down and unable to swallow, when it frequently does harm, however administered. It is of consequence to keep as quiet as possible at this stage and avoid everything tending to excite the animal, such as the removal of the calf, or allowing it to remain, if its removal leads to excitement. I may here state a practical fact that is regarded by many as an exciting cause of the disease, but which I find is not so. The removal of the calf I find to be no exciting cause, although I was taught so, and at one time believed it. It is the invariable practice in my district of Lincolnshire to allow the calf to remain with the cow for a few days, and I find as many cases of the disease, indeed, more in proportion to the number of the cows kept, than in the North of Scotland, where they almost invariably remove the calf as soon as dropped.

I have frequently bled in the first stage of the disease, but with no good result—rather the contrary; as it tends to excite them too much, frequently producing convulsions and the conditions described by Mr. Fleming as resulting from anæmia.

In the comatose stage I have found bleeding frequently remove or alleviate the brain symptoms, but only temporarily, so that I regard bleeding as of little consequence as a curative agent, the nervous system being too much implicated to be benefited by such a powerful depletant. Bleeding, to be useful,

must be had recourse to earlier, even before calving, although it is seldom done ; but I have no doubt from the nature of the affection it would be a preventive if we could always determine what cows were to become affected.

In the second stage, where the animal is down, but not comatose, I proceed on the same principles of moderate stimulations and cathartics, with embrocations along the spine. If the temperature is low, I frequently use a hot smoothing iron along the sides of the spine and across the loins with good effect, by preventing it getting lower or reviving it. Empty the rectum and bladder, draw the teats frequently, and endeavour to make the animal as comfortable as possible, by placing and keeping her in a natural position.

At this stage of the disease, I have frequently had good effects from the application of galvanism, the two poles of a battery being placed one on each side of the spine in the lumbar region, and well pressed down by an assistant with a folded sack or some such non-conductor over them. In all stages of the disease, unless the first, when the cow is still standing, I find galvanism beneficial; in it, the excitement is too great, and it invariably does harm.

If an animal survives twenty-four hours after being first observed, and no marked comatose symptoms are present, my experience is that recovery may be safely predicted if no complication arise, or previous disease of any organ, such as the lungs or liver, exist.

If it is an acute attack and comatose symptoms suddenly show themselves, and the animal is in very high condition, I consign her to the butcher ; for my experience is that they very seldom recover, whatever treatment you adopt. I consider it more in the interest of science to admit your inability to cope with an incurable condition to cure than to exhibit your ignorance and incompetence by attempting, it.

If the comatose symptoms are not rapidly developed, and the animal lives over twenty-four hours or so, and if inability to swallow be present, I find good results from giving medicines in a solid form, in the shape of bolus, which is easily done, and runs no risk of inducing Pneumonia or Bronchitis, as so frequently occurs, however careful we are in administering medicines in the liquid state. Twenty to thirty croton seeds, ammon. carb. 2 drams., ginger 2 drams, with any convenient excipient, form a suitable and appropriate remedy.

As a tonic after the comatose stage has passed, I have good success from tinct. nucis vomicæ, combined with aromatic spirits of ammonia and tinct. capsici. Any complication arising, such as tympanitis, which frequently militates against a cure, must be treated according to recognised practice, by puncturing the rumen, &c., but the ammon. carb. ball has a very good effect in preventing such. It would be useless to weary you with more detail.

Mr. Gerrard then showed the members a brain that he had taken from a cow which had died of Parturient Apoplexy, which manifested a considerable degree of congestion on the anterior lobes principally ; and at the close of the meeting they had an opportunity of seeing him dissect it, when, notwithstanding that it had been some little time in spirit, it showed a distinct congestive appearance on the surface of the brain substance, as well as several small spots of extravasated blood. He then said: Now, gentlemen, I expected and was prepared for a severe criticism of my opinions as to the pathology of this disease, but as the members have dwelt principally upon the therapeutics of the subject, I can only say that, considering the generous manner in which you have received my present attempt to deal with the pathology of the malady, if at some future time a gap were to occur in the contributions to your society, and you were to honour me with the privilege, I would have no objection to come back and deal with the therapeutical part

of the subject, which I could then do in a more complete form than would be admissible at present.

The following gentlemen were then elected officers of the Society for the ensuing year, viz. :—Mr. J. H. Welsby, President; Messrs. W. Whittle, H. Barnes, and J. W. T. Moore, Vice-Presidents; Mr. C. W. Elam, Treasurer; and D. Hutcheon, Secretary.

Votes of thanks to the retiring President and to Mr. Gerrard were carried by acclamation, terminating a very interesting and instructive meeting.

D. HUTCHEON, *Hon. Sec.*

THE MONTREAL VETERINARY ASSOCIATION.

THIS Association held its regular semi-monthly meeting on December 18th, in the lecture hall of the College, Union Avenue. Professor McEachran in the chair. After the usual business routine, Mr. P. H. Cummings, of Quebec, was called upon to read his communication on a case of *Navicular Disease* treated successfully by him during the past summer. The anatomy of the parts involved, the numerous theories advanced as the cause of the disease, and the modes of treatment were explicitly and fully explained. The *frog seton* (the treatment used in the case) was strongly advocated by the speaker, and its mode of introduction plainly demonstrated. This reading led to considerable debate and critical interrogation, which gave Mr. Cummings the opportunity of enlarging still more on the subject, with which, from careful investigation, and practical knowledge, he is thoroughly conversant. Next in order was a paper by Dr. James Bell, of the Montreal General Hospital, and lecturer on *Materia Medica* in the Veterinary College, on Dr. Lister's *Antiseptic Treatment.* The paper was prepared in the most thorough and scientific manner. The system was minutely explained as given by the inventor, which was followed by a number of valuable remarks as to its use in certain cases, such as complicated fractures, amputations, large wounds, &c., based upon personal experience. Some estimate of the pain and suffering prevented by this treatment can be arrived at, when it is generally admitted that operations which, under ordinary treatment, would take weeks or even months to heal, would, under Dr. Lister's *Antiseptic Application*, be thoroughly healed in from one to two weeks—not unfrequently large and dangerous wounds are restored to perfect soundness in ten days or even less. Another noteworthy consideration in favour of this treatment is the almost complete absence of troublesome and dangerous after results, such as Septicæmia, Erysipelas, &c., diseases which are not an uncommon sequence under the ordinary method. Dr. Bell closed by referring to its applicability in veterinary practice, which was supplemented by some useful and practical suggestions from the chairman, who was of the opinion that this new and humane invention would, in the hands of the scientific veterinarian, be of incalculable benefit to the profession. A prolonged discussion ensued, which was entered into by most of the members present, at the termination of which the lecturer exhibited the apparatus used by Dr. Lister, and also the prepared gauze dressing, &c., made by him for the purpose. At the next meeting, to be held on the second Thursday in January, Mr. Lemay will read a paper on "Stable Management."

ROYAL AGRICULTURAL SOCIETY.

AT the monthly Council Meeting, on February 5, the Hon. W. Egerton, M.P., reported that he had been elected Chairman of the Committee for the year 1879. A letter had been received from the Secretary of the Royal Veterinary College, stating that the governors complied with the wishes of the Council

of the Royal Agricultural Society to obtain the services of the inspector of the College for the members of the Society during the present year, and asking whether the list of charges would be as laid down in an accompanying scale; and also what would be the rate of payment for special reports or investigations of outbreaks of disease. The Committee recommended that the proposal of the governors be accepted, and that the charges to members in future be as follows:—

	s.	*d.*
Keep of an ox per week	10	6
„ a sheep „	3	6
„ a pig „	3	6
Personal consultation	10	6
Consultation by letter	10	6
Post-mortem examination and report thereon	21	0
Visits in cases of serious or extensive outbreaks of disease, exclusive of personal and travelling expenses, per diem	42	0

Special reports or investigations to be paid for according to the nature and importance of the investigation, or according to the scale of charges paid for an Article in the JOURNAL. With regard to chemical analysis, the payment should be made according to the scale applicable to subscribers to the College. Since the last meeting of the Committee, Professor Axe had reported on an outbreak of scab in sheep and a case of lead poisoning in cattle; and the Committee recommended that the report in the latter case be published in the agricultural newspapers, viz.:—

Royal Veterinary College, Jan. 13, 1879.

DEAR SIR,—I beg to inform you that I visited Hobb Hill Farm on the 7th inst., and inquired into the circumstances attending an outbreak of disease in a herd of beasts, the property of Mr. Handley.

I have to report that the disease first appeared on January 1, and at the time of my visit six cows had died, and several others were seriously ill. Messrs. Flower, of Derby, and Poyser, of Melbourne, veterinary surgeons, had been consulted by Mr. Handley, and they were of opinion that the malady was due to poisoning by sulphuric and prussic acids.

At the time of the outbreak of the disorder the cows were receiving as food grains, Indian meal, and hay. The grains were stale, having been collected in the summer. With a view to preserving them, they were covered over with sods and earth which had been removed from the side of the road adjoining Mr. Handley's farm. I had an opportunity of examining a portion of the mixture of grains and meal on which the cattle were last fed previously to the outbreak, and in it was found a considerable quantity of lead-slag in a state of fine division. Similar matter was also found in large quantities in the stomachs of two cows of which I made a *post-mortem* inspection. As the roads in lead-mining districts are frequently repaired with lead-slag, the sods and earth referred to may be regarded with suspicion of containing the poison. The symptoms exhibited by the animals during life were strikingly illustrative of lead poisoning, and the *post mortem* lesions likewise point to the same conclusion. Regarding the disease as the result of lead poisoning, I consulted with Mr. Poyser, who was in attendance, and suggested the course of treatment to be pursued. This morning I have received a letter from Mr. Wood, of Wirksworth Hill, informing me that no more deaths have occurred. The stomachs of one of the cows are now being analysed, and the result will no doubt be made known to you by Professor Tuson when the analysis is completed.—I am, yours faithfully,

H. M. Jenkins, Esq. J. WORTLEY AXE, Professor.

Chemical Laboratory, Royal Veterinary College,
Camden Town, N.W., February 3, 1879.

SIR,—In reference to the suspected case of poisoning, sent through you, from Mr. J. B. Wood, to this Institution for investigation, I beg to report as follows :—

On the 12th ult., Professor Axe handed to me a basket, in which I found six parcels and part of a linseed cake. The parcels were respectively labelled—

"A. Sample of Indian meal and grains as used before disease broke out, but washed."

"B. Sample of earth similar to that used for covering the grains; residue of quarter bushel, after repeated washing."

"C. Sample of Indian meal after repeated washing, that sent being residue of about half bushel."

"D. Sample of grains after repeated washing of a bucketful."

"E. Sample of the heap of Indian meal and grains used just before disease appeared, after washing; residue of one cow's feed—*i.e.*, about a bucketful."

"F. Sample of earth got from same place as that used for covering grains, but washed."

On the 21st ult., Professor Simonds handed to me four stomachs of a cow.

The materials contained in each of the parcels and the cows' stomachs were separately submitted to chemical analysis, when I detected a considerable quantity of lead in the parcel marked "E," but this metal could not be discovered in either of the other parcels.

Large quantities of lead were likewise found by analysis in the cows' stomachs; in fact, fragments of the supposed poison were picked out of the cells of the reticulum (second stomach). When these fragments, as well as others of similar appearance detected in parcel "E," were analysed, they were in both instances found to consist of galena, which is chemically a native sulphide of lead.

The sample of linseed cake was not examined, as I thought that in all probability the results of its analysis would not throw any light on the cause of the death of Mr. Wood's animals.—I am, sir, your obedient servant,

RICHARD V. TUSON, F.I.C., F.C.S.,
Professor of Chemistry and Toxicology in
the Royal Veterinary College.

To the Secretary Royal Agricultural Society,
Hanover Square.

The report of the examiners appointed to test the qualifications of the students competing for the Society's veterinary medals and prizes had been received, and the Committee recommended that the Council of the Royal College of Veterinary Surgeons be asked to draw up a modified scheme for the consideration of the Council of the Society at their next meeting.

The Committee also recommended that a communication be made from this Council to the Privy Council, urging upon the Government the importance of immediately placing the United States of America under the provisions of the Act which provides for the slaughter of foreign animals at the place of landing. This report was adopted.

The Hon. W. EGERTON added, with reference to the last paragraph of the Committee's report, that the evidence before the public had led the Committee to recommend that the United States should be placed under the provisions of the Act of 1878 relating to slaughter at the port of landing. It was perfectly true that in the vessel which brought over the animals suffering from Pleuro-pneumonia there were Canadian animals, but it was believed that in

future Canadian animals would be shipped from ports within the Dominion, probably Halifax, instead of Portland; and the Committee had therefore not included Canada in their recommendation.

Mr. DENT said that he would not formally move the rejection of the last clause of the report, but would merely express his regret that it was thought advisable to make the proposed representation to the Privy Council. He foresaw that if those recomendations were carried out it must end in all animals being slaughtered at the port of debarkation. But at the same time he would like to register his protest, and threw out one word of warning, if trade revived, as he hoped and believed it would, the restrictions on the trade in meat would be so great that he was afraid it would almost be at a famine price, and that an outcry would be raised throughout the country, which would result in the Act being repealed. At this moment there was a decided revival of trade in America, and that revival was mainly owing to two successful seasons in agriculture. A revival of trade in America always signalised a similar revival of trade in England, and he thought they should very carefully guard against doing anything which would tend to check it. The agriculturist of America were very large consumers of manufactured articles, and the same remark applied to English agriculturists. He did not see how it was possible to draw any line between the United States and Canada, and he should have been glad if the Veterinary Committee had seen it right to leave the matter entirely in the hands of the Privy Council. His own belief was that the restrictions imposed prior to the passing of the Animals Diseases Act were quite sufficient to keep diseases out of the country. We were no more free of disease than we were before the new regulations came in force.

Mr. JACOB WILSON sincerely hoped that the report presented by the Veterinary Committee would be adopted in its entirety, especially as it included their recommendatioa with reference to the outbreak of diseases at Liverpool. He could assure the Council that there was a very strong feeling of alarm throughout the country at this outbreak; and considering that the farmers of England were now subjected to very great restrictions, he thought it was the duty of the Council as representing the argricultural interest of the country, to express their views to the Privy Council. It was quite possible that the Privy Council had already initiated the action suggested by the Committee, and in that case it would be gratifying to the Lord President to know that he was backed by the agricultural opinion of the country. If, on the other hand, the Privy Council were in a state of doubt as to what ought to be done under the circumstances, the opinion of the Royal Agricultural Society might be of value in aiding them to come to a decision. Therefore on whatever grounds the matter was put, it was desirable that some expression of opinion should be made. It had been no secret whatever that Pleuro-pneumonia had existed to considerable extent throughout the United States of America for some time past, and the other countries of Europe were anxiously watching the action which the Government of this country would take in reference to this outbreak. As to the general trade of the country, he did not for a moment believe that it would be interfered with by the proposal of the Committee. The dead meat trade was extending every day, and the live stock trade had also been considerably developed lately. The Veterinary Committee did not propose to interfere with either trade, but suggested that the live animals imported should be slaughtered at the place of landing. He thought it an exceedingly fortunate thing that this outbreak of disease had taken place before further arrangements had been made for the greater extension of the traffic in American live cattle. He hoped that the Council would speak with no measured voice, and would show the farmers of the country that their interest was being upheld by the Royal Agricultural Society of England.

Mr. BOWEN JONES thought it would be interesting to have a little additional information in reference to the outbreak of disease at Liverpool, and, with the permission of the Council, he should like to ask the Chairman of the Veterinary Committee if a detailed account of the outbreak had been placed before them. For instance, he would like to ask if the animals were moved from the quay by order of the Privy Council, and also whether the same quay was used for the reception and landing of other animals, and also of the Irish stock coming to England, as, if so, it appeared to him that a large amount of danger would be thereby incurred.

The HON. W. EGERTON replied that the animals suffering from Pleuro-pneumonia came in a mixed cargo of American and Canadian animals, and although the latter were recognised by the Canadian dealers themselves, the inspector said he could not distinguish them from the American cattle. With regard to the slaughter of animals, there was no provision at Liverpool or Birkenhead for their slaughter on the quay. At present all the foreign animals were landed together, as he understood, but the Irish cattle were received at a different landing-place.

Mr. JACOB WILSON added, that the animals actually diseased were not moved, but killed on the spot; but the animals in contact were moved and killed in slaughter houses in the town.

Mr. BOWEN JONES looked upon the outbreak as a matter of the greatest importance to agriculturists throughout England. With regard to the recommendation made by the Committee, as far as it went, he entirely sympathised with them, but it was a question in his mind whether the Committee had gone far enough, for he thought it would only have been rational if they had included the Dominion of Canada as well as the United States. He added that they must continually urge on the Privy Council to carry out in its true spirit, and to the letter, the Act passed last session. This Act he regarded as a compromise to please the masses in the large towns, who were uneducated upon the subject.

Mr. T. AVELING was adverse to the proposed communication being sent to the Privy Council. He thought that, on the one hand, the Council had done enough in the matter of legislation, while, on the other, they were doing more than enough to encourage the importation of foreign animals.

Colonel KINGSCOTE most thoroughly agreed with the recommendation of the Veterinary Committee, and would be extremely sorry if the Council did not adopt it. The present outbreak of disease was a danger that had been anticipated for some time. There was an honorary member of the Society in the room—Mr. Fleming—who had studied the question very deeply. Mr. Fleming pointed out to him some months ago that this disease of Pleuro-pneumonia had been for years raging in America, and the great danger we should sustain in allowing animals to come into this country without being slaughtered at the port of landing. The Act of Parliament declared that where there is disease in any country, that country should be scheduled, and as they were naturally alarmed by this outbreak of Pleuro-pneumonia, they asked the Government to prevent, not American meat, but this disease coming in. The report was then adopted.

HIGHLAND AND AGRICULTURAL SOCIETY.

THE monthly meeting of the Directors of this Society was held on February 5th, when a copy of the agreement between the Society and the Royal College of Veterinary Surgeons, referred to at the general meeting on the 15th January, was read.

The principal items in the agreement are that—"Any holder of a certificate granted by the Society since 1848 shall, on application, and on payment

of fees as specified, be admitted as a member of the college, and shall not be required to submit to any further examination previous to such admission. Every holder of a certificate granted by the Society, as aforesaid, from 1848 to 1872, shall be admitted as a member of the college on payment of a registration fee of one guinea. All candidates for such admission to whom such certificates as aforesaid shall have been granted since the year 1872, shall in like manner be entitled to admission on payment of fees according to the following scale or table, that is to say :—

Every holder of a certificate granted during the year 1873, on payment of 2 gs. ; during 1874, 3 gs. ; during 1875, 4 gs. ; during 1876, 5 gs. ; during 1877, 6 gs.; during 1878, 7 gs.

All students now enrolled at any of the teaching schools connected with the Society, to whom such certificates shall hereafter be granted, shall be admitted and enrolled as members of the college on payment of a fee of 7 gs. These rules are signed by A. Gillon, A. Murray, T. Mylne, directors ; and F. N. Menzies, secretary (under the seal of the Highland and Agricultural Society of Scotland) ; also by William Henry Coates, secretary (under seal of the Royal College of Veterinary Surgeons).

PRESENTATION OF A TESTIMONIAL TO PROFESSOR WILLIAM PRITCHARD, M.R.C.V.S.

THIS event took place at the " Theatre " of the Royal Veterinary College, on the 5th inst. The present consisted of a massive silver cup and an address bearing the names of subscribers. The amount contributed was forty guineas. A senior student (Mr. Edgar) presented the gift in the following terms :—

" Professor Pritchard,—We have requested the favour of your presence in this theatre for a few minutes this morning, that we may offer to you our congratulations upon the recent event of your marriage, at the same time embracing the opportunity of expressing our sense of esteem and gratitude for the corteous and zealous consideration ever entertained by you for our academical advancement and professional efficiency.

" We are fully sensible of our advantage in possessing a teacher true to his science—true to his honourable position—at the same time anxious to impress the 'student mind' with a feeling of friendship and personal regard.

" Will you honour us by the acceptance of the piece of plate and address before you, in remembrance of the students now present, of their united good feeling and earnest solicitation for your social happiness and long successful professional career ?" (Applause.)

To this the Professor replied: " Allow me to address you on this occasion as my friends. My friends,—I have set myself many tasks, and have accomplished many, but I am doubtful whether I ever had a more difficult one to deal with than that which you have so kindly imposed upon me now, viz., that of thanking you in an efficient and proper manner for the very handsome testimonial you have to-day presented to me. I will, however, do my best —no man can do more—to give expression to my appreciation of your good feeling, and of my thankfulness for your very kind recognition of my humble endeavours to do my duties towards you as a teacher and at the same time to approach you as a friend. (Cheers.)

" Your representative, Mr. Edgar, has most kindly alluded to my efforts to enact a part which, in our relative positions, is sometimes difficult to play, viz., that of a teacher and friend. I am afraid I have not so completely and so frequently succeeded in this as he would have you believe ; but if I have not, I am egotistical enough to think that the fault is in part your own. For your good, I am obliged at times to be stern, even cross ; but believe me,

when circumstances have necessitated this course, I am sorry, and as vexed as the pupil whom my duty compels me to reprimand. 'A loving parent chasteneth the child, with an affectionate and good intent'; 'tis a painful but a necessary course, and I am sure that with you, it is necessary for it to be understood that 'Pritchard means what he says,' to prevent hilarity and other extravagent conduct which would otherwise probably lead on to unpleasantness and trouble. (Applause.) At the same time, I am very pleased to say that little need of this kind of check has been felt by me, and in most instances a look from me has been sufficient. (Applause.)

"I have often desired to have a chance of apologizing for the abrupt manner in which I took leave of the class at the close of the last winter session. I will now avail myself of this opportunity. As you are all now aware, my last lecture of that term I delivered to you on the morn of my wedding day; and I thought that if the fact of what was about to take place had been made known to you, that the whole of the members of the class would have attended at the church, and have consequently neglected their studies. (Applause.)

"Mr. Edgar has nicely given expression to very kind wishes for the future of my wife and myself, and I cannot but feel assured that he is simply, when doing so, giving utterances to the feelings of every one of you. (Great applause.) How can I thank you? 'I am even poor in thanks, but I thank you.' I can convey no more, but I am sure you will be pleased to hear that the union which you, by this munificent gift, so kindly memorialise, promises to be an exceedingly happy one; for I think I have secured a partner best calculated to make a man happy. If her present happiness can be added to, it will be when I inform her of what has occurred to-day. My friends, when in time to come I look upon this handsome cup and illuminated testimonial, I shall not only be reminded of your good feelings towards me, but shall be stimulated to renewed exertions, even though the energy may be flagging. I cannot say more, but I would have you assured that the goodwill towards me, of which you have given such evidence to-day, will not be forgotten by me so long as I have the ability, or the health to wield that ability for your benefit, here or hereafter." (Great applause.)

Jurisprudence.

WYMONDHAM COUNTY COURT.

DEATH FROM HERNIA.

MR. J. C. CHITTOCK (Chittock and Woods, Norwich) appeared for the plaintiff, Mr. Simms Reeve (instructed by Mr. Godwin Amond, from the office of Messrs. Sadd and Linay) being counsel for the defendant, in the action, George Greenacre, miller, Besthorpe, *v.* David Carlton, farmer, Hingham, which was brought to recover the sum of £50 damages for breach of warranty of a horse.

The case was perhaps one of the most important of its kind ever heard in any court, and though primarily affecting sellers and buyers of horses, the decision cannot fail to be interesting to vendors and purchasers of all kinds of live stock, if not indeed to the whole trading community.

On the defendant's application a jury was sworn, and consisted of the following gentlemen:—Mr. John R. Barnard, fire insurance agent; Mr. E. Beeston, yeoman; Mr. John L. Garrett, miller; Mr. Frederick Howard, farmer; and Mr. John Hare, farmer. When the witnesses were directed to leave the Court an unusually large number of persons withdrew; and amongst

those summoned on both sides there were no fewer than six veterinary surgeons.

Notwithstanding the formidable array of witnesses, only three (exclusive of the plaintiff himself) were called; and the case will perhaps be the more easily comprehended by being put in a connective form. Towards the close of 1877 the defendant was owner of what had formerly been an entire that had been subjected to the process of castration, from the effects of which it had every appearance of having fully recovered, and did whatever work was then required of it. The animal was between four and five years old. After seeing the horse, having the utmost facility afforded him for testing it himself, and being fully informed of the operation which it had previously undergone, the plaintiff asked if it was "sound and all over right." The defendant assured him that it was so; upon which, on the 11th of December, but without receiving any written warranty, the plaintiff purchased the horse for £56. The odd £6 was abandoned so as to bring the claim within the jurisdiction of the Court. On getting it home the horse was not put to any work for some three or four weeks; but after that, it was used on the average three days a week, by having to pull a cart containing about a ton weight. On Saturday, the 2nd of March, and without having hitherto shown the least symptom that there was anything wrong, the animal became ill, and died on the evening of the next day. On Monday, Mr. Arthur Holl, veterinary surgeon, of New Buckenham, assisted by Mr. Thomas Auger, of Wymondham, made a *post-mortem* examination, when it was found that death had been brought about by internal Hernia, caused by the inflammation set up through the operation alluded to. In cross-examination, the plaintiff admitted that when he resolved upon having a *post-mortem* examination, he had not informed the defendant of his intention, but it was not from any improper motive, or from a desire to prevent a veterinary surgeon from being present on his behalf at the time, although he was now convinced it would have been better had he done so. In Mr. Holl's opinion there was a slight rupture before the operation was performed, but no one could then have known of its existence, not even the operator.

At this stage of the evidence, his Honour expressed a doubt as to whether the defendant was liable, as he had made no misrepresentation in selling the horse, the defect in which was unknown to him.

Mr. Chittock replied by quoting from the authorities a case in which it had been decided by the Court above, that in the circumstances under which the defendant had sold the horse to the plaintiff, a seller was liable for all faults existing at the time of sale, even to a latent defect whether known or unknown.

His Honour remarked that in the present instance the horse had lived three months, and inquired when the seller's liability was to cease, or how a man was to protect himself by being responsible for a defect, the existence of which could not be known to him?

Mr. Chittock said that he could only protect himself by giving a qualified guarantee, or for a limited period; and if he did not do that, he would always be liable.

His Honour observed that it seemed hard; but upon the authority of the case cited by Mr. Chittock it looked as if such had been ruled to be the law.

In reply to the learned Judge, Mr. Holl said that the horse might have lived three years from the date of the operation, but the rupture was certain to bring about its death sooner or later.

His Honour thought that, taking everything in consideration, it was a case in which there ought to be a compromise. Both the plaintiff and defendant had acted with the most perfect good faith toward each other, and it struck him they ought to divide the loss.

Mr. Reeve expressed concurrence with his Honour's suggestion, but for a

considerable time the defendant resisted every appeal made to him to fall in with it—the learned counsel stating that the reason was an apprehension that it might be said of him, if he acknowledged liability at all, that he had wilfully sold an unsound horse for a sound one, which was impossible, seeing that the plaintiff's own witnesses had acknowledged the defendant could not have known of the horse's defect at the time of the sale.

Eventually the defendant accepted of an offer to settle the matter by a verdict for £30, and half the plaintiff's costs.

The Jury found for the plaintiff accordingly—the foreman accompanying the finding by an expression of their unanimous opinion that the defendant had done the right thing in submitting to a verdict.

Army Veterinary Department.

Gazette, February 4.

VETERINARY DEPARTMENT.—Veterinary Surgeon, First Class, G. Evans, M.D., from the Royal Artillery, to be Inspecting Veterinary Surgeon.

Gazette, February 11.

ROYAL ARTILLERY.—Veterinary Surgeon S. T. Goddard is placed on retired pay.

The undermentioned Veterinary Surgeons in India, recently arrived from England, are posted as follows:—

First Class Veterinary Surgeon C. Steel, to Quetta, for duty with the First Division Field Force.

First Class Veterinary Surgeon T. J. Lang, Royal Artillery, for duty with the Second Division, Peshawur Valley Field Force.

Veterinary Surgeon J. K. Grainger, Veterinary Department, for duty at Muttra.

Veterinary Surgeon J. Mills (E Battery A Brigade), to port of embarkation, for thirty days from date of availing himself of it; and thence to England, to appear before a medical board.

Veterinary Surgeon F. Smith (A Battery C Brigade, doing duty with G Battery A Brigade), to port of embarkation, for thirty days from date of availing himself of it; and thence to England, to appear before a medical board.

Veterinary Surgeon W. Oliver (C Battery Second Brigade), to England, from date of embarkation, to appear before a medical board.

Obituary.

WE regret to have to record the death, at the early age of 36 years, of James Moore, junr., M.R.C.V.S., of Great Dover Street, Borough, son of J. Moore, M.R.C.V.S., of Upper Berkeley Street, London. He graduated in 1863.

Mr. Thomas Greaves, junr., of Burnley, has also died, at 37 years of age; he graduated in 1869.

Mr. William Wallace, of Wolverhampton, who graduated in 1828, has been reported as dead; as likewise Alfred Challinor, of Bolton, a graduate of 1866.

Morpeth has lost one of its worthy citizens by the demise of Mr. W. Metcalfe Boag, who, though not much known to the profession beyond his

own county—notwithstanding his obtaining his diploma so long ago as 1842—yet worthily represented his profession in Northumberland. The *Newcastle Daily Journal* alludes to him in the following deserved tribute of respect :—"He was a native of Shields, but was brought up and educated at Felton. In early life he went to Kelso, where he learnt the veterinary art under his uncle, who practised in that town and district. He was not satisfied, however, with serving his apprenticeship to the business, but went to Edinburgh, and studied under the late Professor Dick, in the early days of the Veterinary College which he established. Thus fully equipped, he settled at Jedburgh, whence he removed to Morpeth in 1851, succeeding to the practice of Mr. King, who went south to Derby. During the following 27 years he enjoyed a large and increasing practice, having an extensive connection not only among the agriculturists and gentlemen of his district, but also with several large collieries in the west of the county. Mr. Boag, however, was much more than a mere "horse doctor;" he was a well educated, well read, and intelligent gentleman. His superior attainments were soon perceived by the people at Morpeth, and a year after his settlement he was appointed a member of the committee of the Mechanics' Institution, a position he has worthily retained till his death, his last public appearance being as chairman at one of their meetings. He retired from business more than a year ago. He held several public appointments, which he filled with exemplary conscientiousness and fidelity. The last of these—Inspector of Morpeth Market, under the Contagious Diseases (Animals) Act—he resigned three months ago, when the Town Council, by a unanimous resolution, testified to the diligence with which he had performed his duties. Mr. Boag was never married, and has died in his sixty-fourth year. He was of a quiet, retiring disposition, loving his books, and delighting to encourage young men of his acquaintance who had a literary or scientific profession in view. He has left, besides several private bequests, a legacy of £100 to the Mechanics' Institution, to be expended in the purchase of books, and another of the same value to the Dispensary, for its general use."

Notes and News.

DISEASE AMONG AUSTRIAN ARMY HORSES.—According to a telegram from Pesth, an epizoöty, probably Glanders, has broken out among the cavalry and draught horses returned from Bosnia.

POISONING OF SWINE BY BUCKWHEAT.—In THE VETERINARY JOURNAL for 1876, p. 347, there is a very interesting report from Mr. Martin, M.R.C.V.S., of Rochester, with regard to the poisonous effects of buckwheat on lambs, followed by some comments of our own on the toxical action of that plant. According to the *Farmer*, a remarkable occurrence of this nature is chronicled by Dr. Richter in the *Oesterreichisches Landwirthschaftlisches Wochenblatt*. A number of pigs that had been eating largely of buckwheat were noticed shortly afterwards to be off their feed, and their fæces to be dry and hard. These symptoms were followed by strangury, fever, hurried breathing, and death, accompanied by convulsions. On *post-mortem* examination the neck of the bladder was found intensely inflamed in every case, the urinary bladder burst (!), the mucous membrane of the stomach and intestines reddened and swollen, and the lungs and brain congested. In less serious cases, where Glauber's salts and milk were given as medicine, and the buckwheat feeding discontinued, recovery was rapid, and no fresh cases occurred after the food in question was given up.

PROPHYLACTIC TREATMENT OF SWINE PLAGUE.—A correspondent of the *Journal de l'Agriculture*, who has constantly managed to keep his swine free from the Swine Plague, or so-called Hog Cholera, while it was raging in an epizoötic form in the south-east of France, and devastating his neighbour's herds, publishes for the benefit of his fellow agriculturists the details of the treatment to which he believes he owes the immunity of his own stock. Every year, from the commencement of hot weather until the end of October, he gives each of his pigs a dose of sixty to eighty grammes of Glauber's salts once a fortnight; and as soon as the disease appears in his neighbourhood, and as long as it prevails there, he supplements this treatment by the daily administration of two spoonfuls of "phenic vinegar," which he prepares by adding fifteen grammes of pure phenic acid to a litre of ordinary vinegar, such as is used for culinary purposes.

HIPPOPHAGY IN PARIS.—During the year 1878 the horse slaughter-houses of Paris provided the public with 11,319 horses, asses, and mules as food. In 1877 the number was 10,619; so that there is an increase of 700. This augmentation is the best proof that horse-flesh is healthy, agreeable, and nutritive, while its price is markedly less than that of ox beef. A horse-flesh establishment was opened in London last May, but it did not have the success desirable, owing to its having been established by a Frenchman who did not understand our language, and who, besides, had to return to France because of illness. Nevertheless, he received the 1,200 francs offered by M. Decroix, Principal Veterinary Surgeon in the French Army, to any one who should keep such an establishment open in London for three months. The Committee of the Horse-Flesh Society of Paris (9, Rue St. Benoit) now offer a medal of honour to any English butcher who will regularly sell this flesh in a special shop for at least three months.

HYDROPHOBIA IN FRANCE.—It is one of the duties of a French prefect to give information of the particulars of every case of Hydrophobia in the department: but, as may be supposed, these political servants very often neglect a matter which has so little party interest. For the eight years included between 1869 and 1877 only 35 out of 86 departments returned replies to the official inquiries. On these, however, Dr. Proust, in his own name and that of Professor Bouley, has recently issued an interesting report. Professors Tardieu and Bouley had previously given an abstract of the facts they had gathered with regard to the eighteen years from 1850 to 1868. Their statements show that only half the persons bitten by a mad dog or other animal escape Hydrophobia. The number of deaths from this cause during the twenty-six years in question of which they have notes was 740, or a little less than 28 per annum. More men than women were bitten, but sex made very little difference in the mortality. The liability to be bitten of young persons from five to fifteen years of age was found to be greater than that of their seniors, though the fatality of the bite was not so great—not more than one-fourth—while among aged people, from 60 to 70, it amounted to two-thirds, and above that age to three-fourths. Children, therefore, seem to be less readily affected by the poison, though their chances of meeting with the accident are greater. The animals reported as causing the bites during the twenty-six years were—dogs, 707; wolves, 38; cats, 23; fox, 1; cow, 1; and the disease was pretty equally distributed over all the seasons. Observations on the incubation of the disease show that in a large proportion of cases it declares itself within the first sixty days of the inoculation. Thus out of 221 attacks, 139 occurred within three months of the bite, 54 between sixty and one hundred days, 21 between one hundred and one hundred and eighty days, and 3 at yet later periods. The time was generally longer in old people than in young ones. The disease lasted from one to fifteen days; the greater

number of cases holding out about four days. Cauterization, either by actual burning or with butter of antimony, is generally resorted to by French surgeons. This remedy seems to have a great influence in preventing the effect of the poison. In a given number of cases duly operated on, the mortality was only 35·7 per cent.; while out of 117 persons left to themselves, 96, or 82 per cent., died. Facts like these prove that the great evil is not the number of deaths, but the terror and anxiety caused to persons bitten by a strange dog. And the moral is that somebody ought to be made responsible for every dog in the country.—*Pall Mall Gazette.*

SANITARY REGULATIONS FOR DAIRIES, COWSHEDS, AND MILK-SHOPS.—The *Gazette* of Tuesday last contains an Order in Council under the Contagious Diseases (Animals) Act, 1878, providing that every local authority shall open and keep a register of all persons from time to time carrying on in their district the trade of cowkeeper, dairyman, or purveyor of milk; and also providing that, after a maximum period of two months, dating from the publication of notice by the local authority, it shall not be lawful for any person to carry on in the district of the local authority the trade of a cowkeeper, dairyman, or purveyor of milk unless he is registered. New buildings hereafter to be occupied as dairies or cowsheds are to have proper provision for lighting, ventilation, cleansing, drainage, and water supply, "to the reasonable satisfaction" of the local authority; and in all buildings, new or existing, this provision must be such as is necessary or proper for the health and good condition of the cattle, the cleanliness of milk vessels used for containing milk for sale, and the protection of the milk against infection and contamination. Local authorities may make regulations with regard to the cleansing of dairies, cowsheds, milk-shops, and milk vessels. The Order contains other provisions to prevent the contamination of milk in the case of disease; and no person suffering, from a dangerous infectious disorder, or having recently been in contract with a person so suffering, is to be allowed to milk cows or handle vessels used for containing milk, or assist in the trades mentioned in the Order, until all danger of infection has passed away. The Order extends to Great Britain only, and takes effect immediately.

TRICHINOSIS IN SPAIN.—Trichinæ having been discovered in Barcelona in a pig from Navarre, an investigation has shown that the disease appeared in that province two or three years ago, and has been greatly extending.

THE REINDEER.—The reindeer replaces the horse and the ox where these animals cannot be utilised. In the Russian Empire there are computed to be about 1,000,000, of which 680,000 are in Europe. In Siberia there are more than 300,000. The Koraks of Eastern Siberia, who are nomads, and live in skin tents, have immense herds of reindeer, some tribes owning not less than 15,000. These supply their food, clothing, and means of transport. The pride of the Laplanders is also to have large herds of reindeer for their sledges. They drink the milk of these animals, and make cheese of it; they clothe themselves with the skins, and eat the food, which is pronounced good.

NITRITE OF AMYL IN TETANUS.—Prof. Stalker, in the *College Quarterly* (Iowa), says:—"Within the past few months a new remedy has been tried in the treatment of the disease, and if we are to trust the evidence of those who have made the test—and there seems to be no reason for doubting it—with most satisfactory results. The remedy consists in the hypodermic injection of nitrite of amyl. The nitrite is given in doses of twenty minims to thirty minims, twice a day. Recovery is reported in every instance. The operation is a simple one for the veterinarian; and should it prove as successful as it would now appear, it is an addition of no small value in the treatment of one of the most intractable diseases the veterinarian has to deal with.

TURCOMAN HORSES.—Should the Russian Government succeed in its present enterprise against the Turcomans, and press them afterwards into its service in the manner in which it has succeeded with the Kirghiz, the Czar will have at his disposal the finest irregular cavalry in Asia. The excellence of the Turcoman horse is as proverbial as the boldness of its master. Originally of Arab breed, and degenerate so far as beauty is concerned, it nevertheless, in other respects, fully maintains the honour of its descent. For fastidious Europeans its head is too long, its chest too narrow, and its legs too weedy, but in pace and endurance it excites the wonder of all travellers who penetrate to the Turcoman territory. Instances are common in Central Asia of a Turcoman horse performing 600 miles in six and even five successive days. This endurance, of course, is not obtained until after a certain preliminary training. When a foray is about to be undertaken the Turkoman chiefs give their followers a month to get their steeds into good condition. Six pounds of hay and three pounds of barley are then administered daily to the charger, and for half an hour in the morning he is ridden at full speed. To enure him to thirst, only a small allowance of water is given him during the period of training. While on the march his food is mostly kooroot, small balls made of ground maize, barley flour, and raw sheep's fat. His pace is alternately a gentle trot and long walk, every two or three hours a halt being made to allow him to graze and his rider to snatch a few moments of sleep. Marching unceasingly in this manner, the Turcomans cover much ground in a few days, and display an amount of endurance which is considered wonderful even by other Turkestan nomads. The breed owes its origin to a present of 4,200 Arab mares which Tamerlane once made to the Turcomans, and to a later present of 600 by Nadir Shah to the Tekkes. An ordinary horse will fetch from 40 to 50 guineas, a second-rate one about £150, while a thoroughbred is regarded as simply beyond price. Among Russian officers belonging to the Turkestan army there is great emulation to obtain a thoroughbred Tekke horse, and on this account an expedition against the Turcomans is always popular at Tashkend.—*The Globe.*

Correspondence, etc.

VETERINARY PATHOLOGY AND THE MEDICAL PROFESSION.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—In commenting on your report of the meeting of the "Pathological Society of London," I shall doubtless not be alone in expressing my surprise at the remarks of Mr. A. H. Smee, concerning "Garget." That gentleman's statement: "*Nor was it much known to veterinary surgeons,*" is, I venture to say, a presumptuous assertion. Had Mr. Smee gone through the whole vocabulary of cattle diseases, he could not have selected one better known, not only to the veterinary profession, but also to the cow-leech and dairyman, than the one vulgarly called "Garget"; and he would experience difficulty in finding any work on cattle pathology in which this disease is not mentioned.

Mr. Smee's audience must, indeed, have had an intellectual treat in the paper he gave them, and the veterinary profession—which could have told him far more than he told his hearers—must be very grateful to him for leaving his own shoes and endeavouring to step into theirs. Vaccination by medical men during the Rinderpest was sufficiently undignified and absurd, but when Mr. Smee's curiosity leads him to select "Garget" as a likely disease to escape the notice of a dairyman, it is almost laughable.

Now, if there is one disease more than another that would be the first to attract the attention of a dairyman (if he was worthy to be called such), it would be one affecting that person's source of income—viz., a disease interfering with the secretion of milk, and that one of all others would be "Garget," at once detectable by its local symptoms. If the human being had taken the place of the cow in Mr. Smee's paper, I can hardly think he would select affections of the mammary gland during nursing as those most likely to escape the notice of the medical attendant and monthly nurse, not to mention the constitutional disturbance experienced by the patient. Yet here in cattle is a malady of every-day occurrence, patent to the commonest observer, known for centuries; and yet, notwithstanding all this, Mr. Smee comes forward with all the importance of a recent discoverer, to lighten our dark minds, and make manifest what was known before he was born.

Regarding any connection between Diphtheria and "Garget," that is a subject which will be introduced by Professor Axe at the next meeting of the Central Veterinary Medical Association, when I doubt not it will be fully and ably discussed by the gentlemen who are members of that body.

If the medical profession has any wish to advance in the knowledge of comparative pathology, it will get on none the faster by ignoring the sister profession, from which it would derive most help.

As I observe, in a footnote, that you will have some comments to offer in your next issue, regarding Mr. Smee's paper, I will not trespass further on your space than to say that the above remarks have been written without prejudice, and with the desire to render honour to whom honour is due.

Yours faithfully,

J. WOODROFFE HILL, F.R.C.V.S.

Wolverhampton, *Feb. 1st*, 1879.

P.S.—I believe Prof. Duguid is connected with the Brown Institute, yet, strange to say, his name is omitted in the list of medical gentlemen nominated to afford *much valuable information* concerning a *veterinary subject*—"Garget," to wit.

THE FELLOWSHIP DEGREE.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Will you do me the favour to find a corner in the next issue of the VETERINARY JOURNAL for the following few remarks? First, I am desirous of intimating to the profession that no diminution of interest in its welfare has caused me to be absent of late from some of the meetings of Council, the explanation being that in my weakened health I require prolonged rest. I had quite hoped to have attended the last quarterly meeting, where I should certainly have urged dissent from the decision which was arrived at in respect of the educational test for candidates for the Fellowship Degree, as I have learnt with regret from the proof sheet of the proceedings, which has come before me in exercise of my function as a member of the Publishing Committee, that which I believe to have been a serious digression from the original intention. I believed the design in establishing a higher degree was to insure the stamp of genuine metal in such representatives of our body; and I think it cannot but be acknowledged a humiliating reflection, how a discerning public may infer to the disadvantage of *members* of our profession holding the lower qualification, when for the higher (the Fellowship), the standard is comprised in the following requirements:—

Firstly, such knowledge of Latin as to write a Latin prescription, translate a prescription from Latin (assuredly but a mean test of proficiency, and barely a guarantee of ability to construe an independent line of Latin composition). Secondly, such acquaintance with ordinary rules of arithmetic

as may be necessary for carrying on the business of a veterinary surgeon, and for which probably the capacity for casting up the columns of his ledger and his bills might suffice. Thirdly, in writing a composition or a letter on a given subject with correctness and facility of expression and grammatical accuracy; for which and the foregoing educational attainments the School Board nowadays can scarcely fail to qualify. Therefore, may we hope to have all *Fellows* in the future, and if so, may I ask, *cui bono*, and what gain to the profession or to the public may be expected to result from the distinction of the Second Degree? I hope sincerely that in making these observations, which I conceive to be a duty, whilst an enforced absentee, *pro tem.*, from my post, I may have urged nothing to assail the sensitiveness of any, and my desire to help and not to hinder the good of our profession has alone prompted me to trespass on your space and your readers' notice.

Yours faithfully,

114, Mount Street, London, J. ROALFE COX.
January 24th, 1879.

DEAR SIR,—In the current month's number of the VETERINARY JOURNAL I note a report of the proceedings of the Council of the Royal College of Veterinary Surgeons, and am surprised to find they have thought fit (and apparently after little or no discussion) to adopt the Report of the Committee appointed to consider the educational tests required from candidates for the Fellowship Degree. That the standard was of too high a character in the first instance I am prepared to admit, but how it will at present secure a sufficiently high social or educational status I must confess I am at a loss to perceive. I consider this change a retrograde step of very great importance, and calculated to expose the Degree to ridicule. I have no wish to appear selfish or egotistical, but I do hope the Council will reconsider their decision, and not allow it to go forth to the world that less is required of a member of the Royal College to obtain the Degree of Fellow than is demanded of a student to matriculate for entrance to the College. Veterinary surgeons have many drawbacks in their professional career which tend to prevent them from enjoying that status in general society which is their due; and I had hoped the Degree of Fellowship, fought for and won, would have been a great stimulus towards raising the profession to a standard equal to that enjoyed by the sister profession. We ought to take this matter in hand, and I would suggest that you should call a meeting of the Fellows in London, to debate this and any other matter connected with this subject, with the view to submitting a report to the Council of the Royal College of Veterinary Surgeons for their approval and careful consideration.

Yours faithfully,

BEN. H. RUSSELL, Captain, F.R.C.V.S.

Grantham, *February*, 1879.

THE TITLE OF VETERINARY SURGEON.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—This subject has of late been so prominently brought to notice in the pages of the VETERINARY JOURNAL, and the urgent necessity of a "penal clause" so powerfully advocated by yourself and supported by able letters from numbers of your correspondents, that the members of our profession, far and wide, must see that the time has arrived for them to unite in endeavouring, by every means in their power, to obtain that protection without which, I fear, all attempts at professional and social advancement will be futile.

As to the title of "Veterinary Surgeon" being of ancient or of comparatively modern origin, matters but little. The fact that graduates of the Royal College of Veterinary Surgeons alone have the exclusive right of assuming it remains indisputable; and this being the case, it is all the more to be regretted that we are not quite unanimous in our wish to obtain legal power to prevent the unqualified practitioner from continuing to wear his "borrowed plumes."

Perhaps, since the publication of your able editorial in the October number of the Journal, in which the views of the majority of our colleagues are so fully expressed, many of those who, for reasons of their own, were unfavourable to the scheme, may on further consideration have withdrawn their opposition. Let us hope so; for we can ill afford to have dissentient views in our ranks.

The arguments that "a good practitioner does not require protection from the quack," and "that we are agitating in favour of a movement having for its object the suppression of quackery," have been so completely upset by your subsequent remarks as to require no further comment.

Your denial of the latter statement is certainty echoed by all right-minded members of our profession; for in our endeavour to protect ourselves we do not for a moment contemplate the slightest injury to the empiric. By all means let him practice his art, and do his best to provide the necessaries of life for himself and family; but, at the same time, let any attempt on his part to deceive the public, by usurping a title to which he has no right, be made a punishable offence. Let the "Farrier, Cowleech, Canine Surgeon," or whatever name he may choose to adopt, enter the lists fairly with the veterinary surgeon, and then if Squire A—— or Farmer B—— thinks proper, for pecuniary or other reasons, to employ the former in preference to the latter, he is at perfect liberty to do so.

In endeavouring to obtain legal protection we are not altogether acting from selfish motives, but also for the benefit of the public generally; for, as you observe, "they (the public) cannot always judge as to the merits of qualified and non-qualified men, nor do they often care to inquire if every man who designates himself a "Veterinary Surgeon" has really any claim to the title. That this is the experience of many, more especially country practitioners, very few can deny.

With further reference to this subject, you remark that "neither can the profession protect itself from the stigma which attaches to their *lâches* and misconduct, but must submit to the degradation of having their sins of omission and commission laid to its charge."

We have only to refer to the frequent newspaper reports to testify to the truth of this; and, unfortunately, we cannot deny that the reputation of the profession is considerably damaged by such disgraceful scenes as those described by you, and by your correspondent "Verbum Sap." I could add to their number, but refrain from doing so, as it would be needlessly trespassing on your valuable space, and no further illustrations to prove the urgent necessity of protection for ourselves and the public are required.

I am, dear sir, yours, very truly,

"NEMO."

A "QUID PRO QUO."

To the Editor of the VETERINARY JOURNAL.

SIR,—The medical faculty have charged members of the profession with ignorance concerning that disease they call "Garget," and known to us as Mammitis or Mastitis, in their attempt to prove an analogy between the malady and Diphtheria. What will they now charge our profession with,

after perusal of the following advertisement, which appears in the *Daily Telegraph* of the 13th inst.? :—

> "THE CHILDREN'S LIFE PRESERVER.—EDGAR'S CROUP LOTION, a certain cure for croup. Also the best-known remedy for bronchitis, sore throats, hoarseness, or loss of voice arising from cold or over-exertion in singing or speaking.
>
> "EDGAR'S CROUP LOTION.
>
> "Prepared only by the Proprietor, James Edgar, Chemist, M.R.C.V.S. and L.V.M.S., Dartford, Kent. Observe the name on the Government stamp of each bottle. Retail of all Chemists, in bottles 2s. 9d. each."

We are certainly advancing, and in a mutual ratio. Medical men are deputed to investigate the so-styled "Garget," as affecting cows. We must watch with some anxiety the "*cui bono*," for they have a bold "card" to beat here, as Edgar's Croup Lotion is a "*certain cure*." Well, it's fair "poaching," perhaps; and Dr. Warburton still lives—he who doctored horses, cows, and other "things," and human beings as well. Progress, indeed—bah!

Yours truly,

February, 1879. "ARTEMUS SECUNDUS."

VETERINARY OBSTETRICS.

To the Editor of the VETERINARY JOURNAL.

SIR,—Since my communication advocating the use of the chain saw and chain sector in the operation of embryotomy, Messrs. Arnold and Sons have kindly made for me the above instruments. I have been waiting for an opportunity to give them a practical trial, but a case requiring their use not having occurred, I have tried them on fœtal calves, *ex utero*, and am fully convinced, from the ease and rapidity with which the neck was cut through, and the fore and hind limbs detached, that some of the greatest difficulties met with in obstetric practice will now be easily overcome.

I remain, yours respectfully,

Sleaford, *February*, 1879. J. HOOLE.

THE CASTRATION OF CRYPTORCHID HORSES.

To the Editor of the VETERINARY JOURNAL.

SIR,—I am induced to write to you in consequence of being an eye-witness to an operation upon a rig horse by Farmer Miles the other day. I believe that most veterinary surgeons in the United Kingdom have heard of Mr. Miles, but many, perhaps, are perplexed as to what they are to think of him—whether he really is what he professes to be, or an impostor. This being my belief, and delighting to honour merit whenever and wherever I may find it, I thought, perhaps, the evidence of a member of our profession, however humble, might in a degree prove acceptable to some of the readers of your valuable Journal.

On Monday last, the 6th inst., I went to Greenford, by invitation, to see the farmer operate upon a rig horse; and I can say the operation was most scientifically and cleverly performed—the way in which the missing testicle was brought to light was truly wonderful. I am also of opinion that Mr. Miles' method of castration, looking upon it as a simple operation, and putting the question of rigs on one side, is superior to the usual method practised in this country, and one that I should like to see generally adopted, as it is both scientific and humane.

I should advise those of my brother practitioners who have not had an opportunity of seeing Mr. Miles operate, by no means to condemn him until they do. No doubt he has made enemies by his first ill-advised and boastful circulars; but that he erred in ignorance of our English customs, and not wilfully, I think any one who has ten minutes' conversation with him will be convinced of.

Should you feel disposed to consign this to the wastepaper-basket, or publish it in your next, it is equally at your service.

I remain, sir, your obedient servant,

J. H. BENNETT, M.R.C.V.S.

Havering-Atte-Bower, Essex, *Jan.* 10.

NOTICE TO CORRESPONDENTS, ETC.

THE great pressure on our space has compelled us to withhold several communications and reports of Societies until our next issue.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. Blakeway, Stourbridge; J. Roalfe Cox, London; Professor Walley, Edinburgh; E. Decroix, Principal Veterinary Surgeon, Paris; A. Gunn, Beauly, N.B.; J. W. Hill, Wolverhampton; Captain Russell, Grantham; L. Butters, Norwich; W. B. Walters, Royal Engineers, Chatham; J. Hoole, Sleaford; Arnold and Sons, London; "Cyclop"; G. Gray, Bakewell; "Nemo"; A. L. Butters, Sunderland; T. W. Mayer, Cirencester; S. Locke, Manchester; "Artemus Secundus"; F. F. Collins, Principal Veterinary Surgeon, Bengal; T. Moore, London; J. D. Overed, Blofield; J. McFadyean, Edinburgh; W. Broughton, Leeds.

BOOKS AND PAMPHLETS: *O. Larcher*, Mélanges de Pathologie Comparée; *H. Flemming*, Physiologie und Allgemeine Pathologie der Haussäugthiere; *E. Zorn*, Die äusseren Krankheiten der Landwirthschaftlichen Hausthiere; *R. Willis*, William Harvey: a History of the Discovery of the Circulation of the Blood; *R. Neale*, The Medical Digest; *W. Wilckens*, Form und Leben der Landwirthschftlichen Hausthiere.

JOURNALS, ETC.: *Mark Lane Express; Annales de Méd. Vétérinaire de Bruxelles; Agricultural Gazette; Wochenschrift für Viehzucht und Thierheilkunde; Der Thierarzt; Journal of the National Agricultural Society of Victoria; Repertorium der Thierheilkunde; Lancet; Medical Press; Revue Vétérinaire; Recueil de Médecine Vétérinaire; Archives Vétérinaire; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Archiv für Wissenschaftliche und Practische Thierheilkunde; British Medical Journal; London Medical Record; Sportsman's Journal; Live Stock Journal; Nature; Broad Arrow; United Service Gazette.*

NEWSPAPERS: *Irish Times; Leinster Express; Scotsman; Birmingham Gazette; Wilts and Gloucester Standard; Edinburgh Courant; Newcastle Daily Journal.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded, addressed to the Editor, VETERINARY JOURNAL, Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.